

ARMS CONTROL PROGRAM PLAN

Fiscal Years 2000-2001



Prepared by the

Office of the Under Secretary of Defense (Acquisition, Technology, and Logistics)

July 7, 2000



ACQUISITION AND
TECHNOLOGY

OFFICE OF THE UNDER SECRETARY OF DEFENSE

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WASHINGTON DC 20301-3000

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MEMORANDUM FOR DISTRIBUTION

SUBJECT: Fiscal Years 2000-2001 Arms Control Program Plan

Attached is the DoD Arms Control Program Plan for Fiscal Years 2000-2001. This plan encompasses all arms control programs under the purview of the Office of the Under Secretary of Defense (Acquisition, Technology and Logistics). For convenience, the plan groups these programs into six areas: Conventional, Strategic, Chemical, Biological, Nuclear and Information Processing.

The programs in this plan address the DoD implementation and compliance requirements for arms control agreements currently in force, to which the U.S. Government is a party, as well as those which are expected to enter into force in the near future. The Plan was developed under the auspices of the Treaty Managers of the Office of the Under Secretary of Defense (Acquisition, Technology and Logistics).

Any questions on this Plan should be directed to Lieutenant Commander Mike Woods, (703) 697-8158, of this office.

A handwritten signature in black ink, reading "Kent G. Stansberry", is positioned above the printed name.

Kent G. Stansberry
Deputy Director
Arms Control Implementation
and Compliance

Attachment: as

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SECTION 1

OVERVIEW

1.1 PURPOSE AND SCOPE OF THE PLAN

The purpose of this Plan is to describe the DoD program required for the United States to verify other nations' compliance, and ensure U.S. compliance with arms control treaties, agreements and confidence-and-security-building measures (CSBMs). This program supports the planning, implementation, and conduct of the required inspections, monitoring, and data exchanges. This Plan outlines the operations necessary to prepare for and implement arms control treaties and agreements, the development of equipment and technologies, and the provisions for manpower/maintenance associated with equipment/technology development. This plan was developed based on detailed guidance, validated requirements, and identified long-term needs for each treaty area.

The scope of this Program Plan describes the Operations and Maintenance (O&M) and Procurement activities needed to ensure DoD compliance and the broad-based Research, Development, Test, and Evaluation (RDT&E) program supporting implementation of on-site and aerial inspection and monitoring regimes, data and information exchanges, and other U.S. compliance activities. For RDT&E, it provides an overview of current technology development requirements, defines R&D goals and objectives, presents planning assumptions, describes projects and identifies funding needs. It also defines the O&M Program goals and objectives by providing a description of funding and activities allocated under O&M program elements (PEs). The Plan includes details in six areas: Conventional Forces, Strategic Forces, Chemical Weapons, Biological Weapons, Nuclear Testing and Special Nuclear Materials, and Information Processing. For each area (RDT&E, Procurement (where applicable), and O&M), programs are described in terms of the specific requirements addressed, the nature of and justification for each project, and key milestones involved. The projects covered in this Plan are those currently funded in arms control PEs. Planned funding for Fiscal Years 2000-2001 is provided for each treaty area. The Plan does not include either complementary work being done pursuant to other PEs or unfunded projects. The Plan does not address the role of national technical means (NTM) in monitoring treaty compliance.

1.2 AUTHORITY

This Plan is prepared under the authority of the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)). Its preparation is a cooperative effort by the Office of the Under Secretary of Defense for Acquisition and Technology (OUSD(AT&L)) Treaty Managers, the Joint Staff, Department of the Army, Department of the Air Force, and the Department of the Navy Compliance and Implementation Officials.

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SECTION 2

ARMS CONTROL ACTIVITIES AND PROGRAM GUIDANCE

2.1 INTRODUCTION

The end of the Cold War fundamentally changed U.S. security imperatives. The scope, methods, and objectives for controlling arms have changed accordingly. In response to these changes, the Administration has articulated an integrated program to deal with threats to U.S. security from various weapons systems, from their proliferation, from the technology that makes them possible, and from their impact on regional and global conflict and cooperation. Methods employed in this endeavor have evolved from bilateral treaties to comprehensive, multilateral agreements and regimes that can be expanded, adjusted, and adapted according to the future security needs of the United States and its allies. As President Clinton stated in his December 1999 National Security Strategy, “Arms control and nonproliferation initiatives are an essential element of our national security strategy.”

2.2 SCOPE

Current agreements. This plan covers the implementation of international arms control agreements that are legally or politically binding on the United States Government (USG), as well as those obligations undertaken by the USG as a matter of policy to further USG arms control objectives. Agreements that are legally binding are those that have entered into force to which the USG is a State Party, such as the Anti-Ballistic Missile (ABM) Treaty, the Treaty on Conventional Armed Forces in Europe (CFE), the Strategic Arms Reduction Treaty (START), the Intermediate Range Nuclear Forces (INF) Treaty, the Biological Weapons Convention (BWC), the Chemical Weapons Convention (CWC), and the Convention on Conventional Weapons (CCW) and its Protocols I, II, and the Amended Protocol II. Agreements that are politically binding are those that have entered into force that do not have the status of a legally binding treaty, but to which the USG has made a political commitment to implement, such as the Vienna Document 1999 (VD99), the United Nations Register of Conventional Arms, and the Missile Technology Control Regime (MTCR). The USG has implementation and compliance obligations under most of these agreements. Appendix B briefly describes each of these agreements and Appendix C lays out current planning assumptions.

Data exchanges, inspections, continuous monitoring activities, and meetings of the Special Verification Commission (SVC) and the Joint Compliance and Inspection Commission (JCIC) continue under the terms of the INF and START Treaties. The United States continues to exercise its rights to conduct on-site inspections under both the START and INF treaties. Although the Russian Federation has not fully exercised its rights to conduct on-site inspections

under these treaties, the United States must continue to be prepared should the Russian Federation decide to fully exercise its treaty rights. In FY99, 36 START inspections and 26 escort missions took place. Under INF in FY99, 5 inspections and 2 escort missions were conducted. On-site inspection activity under the INF Treaty will cease as of May 31, 2001. START treaty inspections will continue as long as the Treaty remains in force.

At the Istanbul Summit of November 1999 the CFE Treaty was adapted to better reflect the new political environment in Europe. This is the culmination of work started when the State Parties agreed at the May 1996 Review Conference to begin a “thorough process aimed at improving the operation of the Treaty in a changing environment.” The original text will remain in force until all parties ratify the Agreement on Adaptation. President Clinton has stated that he will not submit the Agreement to the Senate for advice and consent until Russian forces have been reduced to the flank levels set forth in the adapted treaty. The accompanying CFE Final Act contains a number of important political commitments. Additionally, modifications to the Vienna Document were agreed to at the Istanbul Summit and became effective January 1, 2000.

Seeking greater transparency, the member states of the politically-binding Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies modified their reporting categories in 1999. The participating states will continue to investigate other measures to ensure that reportable transfers do not contribute to the development and enhancement of military capabilities that undermine the Arrangement’s goals. The United Nations Transparency in Armaments (UN TIA) Measure may broaden its scope and increase the detail of its reporting requirements.

The United States and other Parties to the 1980 United Nations Convention on Conventional Weapons (CCW) finalized their first Review Conference in May 1996. This included the adoption of an amended protocol on the use of mines, booby traps, and other devices (Protocol II). On May 20, 1999 the Senate gave their advice and consent to ratify Amended Protocol II, which entered into force on December 3, 1998.

Certain agreements will continue to raise special implementation challenges. The BWC, which entered into force in 1975, prohibits the development, production, stockpiling, and acquisition of biological agents and toxin weapons. In connection with the Review Conferences of State Parties held every five years subsequent to BWC entry into force (EIF), the Parties are implementing confidence building and transparency measures and considering new measures to provide increased transparency and enhance compliance with the BWC. Negotiations in Geneva on a binding BWC Protocol have intensified since January 1998 when President Clinton called for strengthening the Convention by developing a “strong BWC protocol” that would include declarations, visits, and investigations.

The CWC entered into force on April 29, 1997. Initial inspections of U.S. chemical weapons storage (CWSF), former production (CWPF), and destruction facilities (CWDF) began

in June 1997 and were completed in November 1997. All initially declared U.S. Government facilities were again inspected in 1998 and routine periodic inspections will continue at all CWSF, CWPF, and CWDF until total destruction of chemical weapons and specialized equipment is completed (approximately 2007). Continuous monitoring is ongoing at operating CWDF's. The 105th Congress passed CWC implementing legislation in October 1998. The President signed the Executive Order (EO 13128) on June 25, 1999, providing details required by the Implementation Act on establishing regulations. The Presidential Decision Directive (PDD-70) was completed on December 17, 1999, elaborating on the specific division of responsibilities between the National Authority, Lead Agencies, and other USG agencies. Additionally in late December, a Supplemental Policy Paper, the Department of State Sampling/Records Regulations, and the Department of Commerce CWC Enforcement Regulations were completed. The last two documents combined with the Export Regulations and International Traffic in Arms Regulations are the combined National CWC Regulations. The completion of the National Regulations allows the USG to collect CWC declarations from industry. This in-turn legally subjects commercial manufacturers and consumers of certain chemicals to routine inspections. Challenge inspections may be initiated at any time.

Agreements not yet in force. Budgeting and implementation planning is also needed for certain agreements that have not yet entered into force. This planning is necessary given treaty obligations at entry-into-force and does not attempt to prejudge ratification. These agreements include the Treaty on Open Skies, antipersonnel landmine (APL) initiatives, potential small arms initiatives, the Comprehensive Nuclear-Test-Ban Treaty (CTBT), the September 1997 Agreements related to the Anti-Ballistic Missile (ABM) Treaty, the START II Treaty with its 1997 Protocol, the U.S. and Russian Presidents' statement on START II follow-on negotiations (START III), the Protocol, Additional to the Agreement, between the U.S. and the IAEA for the Application of Safeguards in the U.S., and a Fissile Material Cutoff Treaty (FMCT). A description of these treaties/agreements can be found in Appendix B, while a current set of applicable planning assumptions is in Appendix C of this document.

Implementation challenges and planning for these agreements begin well in advance of anticipated EIF to ensure that the USG can comply with its treaty obligations. For example, the Treaty on Open Skies, whose further date of entry into force remains uncertain, has certain provisions being provisionally applied. Numerous trial flights and practice certifications have taken place, along with the modification of required aircraft and the acquisition of sensors.

At the May 1996 CCW Review Conference the U.S. and other State Parties also adopted a new protocol on blinding laser weapons (Protocol IV). It was submitted to the Senate for advice and consent to ratification in January 1997 and is still awaiting final Senate action. In the mean time however, Protocol IV entered into force on July 31, 1998.

Following the conclusion of the CCW Review Conference, the President announced a U.S. policy that calls for aggressively pursuing an international agreement banning the use, stockpiling,

production, and transfer of all APL, with a view to completing the negotiation as soon as possible. However, the United States decided not to sign the Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction (Ottawa Treaty) opened for signature at Ottawa, Canada, on December 2, 1997 because important U.S. security concerns were not being met in the document as written. The Ottawa Convention entered into force on March 1, 1999. The United States continues to pursue an APL transfer ban at the Conference on Disarmament in Geneva.

The United States signed the CTBT on September 24, 1996. On September 22, 1997, the President forwarded the CTBT to the Senate for its advice and consent to ratification. On 13 October 1999 the Senate declined to provide consent to the ratification and the treaty was returned to the Senate calendar for future consideration. Continued implementation of the verification aspects of the CTBT is the policy of the Administration as stated by the President, the Secretary of State, and SECDEF. The President stated on October 13, 1999 that the U.S. would bring the test ban treaty into force and would continue the development of the international monitoring system. This statement was further defined by the Secretary of State in an October 15 cable to all diplomatic posts and by the SECDEF at meetings with foreign ministers. A Preparatory Commission, established to carry out, among other things, the preparations necessary for establishing the verification regime required by the Treaty continues to operate despite the slow movement to ratification by the 44 specific States parties to the Treaty. While, the Senate failed to achieve the required votes for ratification, the United States continues to actively participate in meetings of the Commission and budgets and plans for its contribution to the verification regime required under the Treaty. The regime includes technologies for monitoring; consultation and clarification provisions; voluntary confidence-building measures; and intrusive on-site inspections that could affect DoD.

EIF of the CTBT is conditioned upon ratification by 44 specific states, including all nuclear weapon states and all so-called threshold states (e.g., India, Israel, and Pakistan). In accordance with Article XIV of the Treaty, a conference of ratifying States and non-ratifying signatories was held in October, 1999, to address ways to facilitate EIF. As of March 8, 2000, 28 of the 44 have ratified, but achieving the ratifications necessary for EIF will continue to be a challenge in 2000.

In accordance with the President's decision, the United States is observing a moratorium on nuclear test explosions until CTBT EIF.

START II will contribute to strategic stability through further reduction in the number of strategic offensive arms, as well as the ban on inter-continental ballistic missiles (ICBMs) with more than one warhead. However, submarine-launched ballistic missiles, SLBMs, may retain more than one warhead per missile. Once the Treaty enters into force, additional inspections will occur to verify the elimination of heavy ICBMs and their launch canisters and the elimination or conversion of heavy ICBM silos. A Protocol signed on September 26, 1997, would extend the

implementation time line to December 31, 2007, but would require early deactivation of systems that will be eliminated under the Treaty by December 31, 2003. This Protocol has not yet been forwarded to the Senate for advice and consent to ratification.

On June 20, 1999, Presidents Clinton and Yeltsin agreed to begin preliminary discussions on START III and possible modifications in the ABM Treaty to allow U.S. NMD deployment. These discussions have been occurring regularly since August, 1999.

The START III discussions are based on the March 21, 1997, Helsinki Summit Joint Statement on parameters for further reductions in strategic offensive arms. In this Joint Statement, Presidents Clinton and Yeltsin agreed that START III would reduce deployed strategic nuclear warhead levels for the U.S. and the Russian Federation (RF) to 2000-2500 each by December 31, 2007. It is contemplated that START III would also, for the first time, include nuclear warhead dismantlement and transparency measures related to warhead inventories. The Presidents also agreed to consideration in the context of START III, but as separate issues, possible measures relating to long-range nuclear sea-launched cruise missiles (SLCMs) and tactical nuclear systems.

On September 26, 1997, the United States, Russia, Belarus, Ukraine and Kazakhstan signed five agreements relating to the ABM Treaty and theater missile defense systems. The agreements are:

- *The Memorandum of Understanding on Succession (MOUS)*;
- *The First Agreed Statement (on lower-velocity theater missile defense (TMD) systems)*;
- *The Second Agreed Statement (on higher-velocity TMD systems)*;
- *An Agreement on Confidence-Building Measures (CBMA)*; and
- *Regulations of the Standing Consultative Commission (SCC)*.

The MOUS have not yet been sent to the Senate for advice and consent to ratification. Further, the remaining agreements reflected above also are not legally binding until START II enters into force. But once the MOUS enters into force, it will establish Russia, Belarus, Kazakhstan and Ukraine as ABM Treaty successors to the Soviet Union. It limits the successors collectively to one ABM deployment area with up to 100 ABM launchers.

Under the First Agreed Statement, TMD systems with interceptor velocities up to 3 km per second will be deemed, within the meaning of paragraph VI (a), not to have been given capabilities “to counter strategic ballistic missiles or their elements in flight trajectory and not to have been tested in an ABM mode” as long as they are not tested against target ballistic missiles with a velocity over 5 km per second or a range of 3500 km.

Under the Second Agreed Statement, TMD systems with interceptor velocities over 3 km per second may not be tested against ballistic-target missiles with over 5 km per second velocity or 3500 km range. Space-based TMD interceptors and space-based components based on "other physical principles" capable of substituting for space-based TMD interceptors (e.g., lasers) are prohibited.

The CBMA requires data exchange and test notifications for specified low-velocity, i.e., less than or equal to 3 km per second, TMD systems. Currently, these are the Army Theater High Altitude Area Defense (THAAD) system, the Navy Theater Wide system and the SA-12. All higher velocity TMD systems are subject to the CBMA requirements. Any party may on a voluntary basis arrange a demonstration of its systems or their components, or an observation of their tests.

The SCC Regulations would revise the operating procedures of the SCC to accommodate a multilateral environment.

In connection with the signing of these documents, the United States, Belarus, Kazakhstan, Russia and Ukraine each made a unilateral statement on Plans with Respect to Systems to Counter Ballistic Missiles Other Than Strategic Ballistic Missiles and initialed the Joint Statement on the Annual Exchange of Information on the Status of Plans and Programs. The First and Second Agreed Statements will enter into force upon EIF of the MOUS. The CBMA will enter into force simultaneously with EIF of the First and Second Agreed Statements.

On May 15, 1997, the International Atomic Energy Agency (IAEA) adopted a Model Protocol to strengthen its current safeguards system with the aim of improving its capability to detect clandestine nuclear activities. On June 12, 1998, "The Protocol Additional to the Agreement between the U.S. and the IAEA for the Application of Safeguards in the U.S." (referred to as the Strengthened Safeguards System Protocol, or S3P) was agreed to by the IAEA Board of Governors, and signed by both parties. In addition to the language of the Model Protocol, the U.S. Protocol contains a National Security Exclusion statement and a Subsidiary Arrangement for the use of Managed Access.

Under this agreement, more than two dozen current or former defense related facilities will be made available for IAEA inspections. The U.S. intends to apply all provisions except where they involve information or locations of direct national security significance to the United States. Furthermore, the U.S. has stated that it will treat the Protocol as a legally binding treaty, with the Department of State expecting to submit the treaty to the Senate for advice and consent for ratification in late FY00, followed by EIF.

The Strengthened Safeguards System Protocol may have a significant impact on DoD equities located at certain facilities operated by the Department of Energy (DOE) and the Nuclear Regulatory Commission (NRC). DOE and NRC facilities made eligible for safeguards inspections

under this additional protocol, will have to submit data declarations and will be subjected to periodic access by IAEA inspectors. The DoD, through its Defense Treaty Inspection Readiness Program (DTIRP) is reviewing the list of DOE and NRC facilities eligible for strengthened safeguards inspections and conducting assessments to identify DoD programs and equities at or in proximity to these facilities to determine possible vulnerabilities posed by an IAEA strengthened safeguards inspection regime. By the time this Protocol EIF, DoD and DoD contractors must be prepared to protect sensitive national security and proprietary equities located at or near these facilities.

From this agreement, the DoD can expect the following taskings: 1) identify enhanced safeguard measures under the additional protocol, and characterize operational procedures and technical capabilities; 2) review current eligible facility list and all additional facilities/activities required to be declared under the Strengthened Safeguards System Protocol, to ensure the application of strengthened safeguards measures will not adversely impact DoD programs of national security interest; and 3) establish a DoD process to review future additions to the eligible facility list to ensure adequate procedures are in place to protect any DoD national security interest.

In September 1996, the U.S. called upon the Geneva Conference on Disarmament (CD) to begin deliberations on a Fissile Material Cutoff Treaty (FMCT). At the July-August 1998 session of the CD, consensus was reached on establishing an ad hoc committee to prepare for the commencement of formal FMCT negotiations, which since then have been delayed.

In FMCT negotiations, the U.S. will press for a focused treaty that would require declaration and inspection of fissile material production facilities (e.g., plutonium and highly enriched uranium), and of stockpiled fissile material introduced after EIF. It is expected that the IAEA would conduct FMCT verification inspections at U.S. facilities, with routine inspections at declared facilities, supplemented by non-routine inspections to detect undeclared activities at any ground work site. It is also expected that no national security exclusion clause will be included. As the negotiations get under way, the DoD will conduct a comprehensive review and technical assessment, much like under the S3P, to identify DoD programs and equities vulnerable to a FMCT verification regime. The DoD implementation of a FMCT requires careful consideration and forethought regarding potential risks, whether direct or indirect, to critical DoD missions.

Assisting regional arrangements. Beyond agreements to which the United States is, or plans to become, a party, the DoD should also expect the USG to participate in new compliance-related activities in regional arrangements. Regional security agreements in unstable areas such as the Middle East, South Asia, and the Korean Peninsula could involve the United States in implementation activities or the verification of provisions reached by the regional states. The Organization of American States (OAS) continues to explore confidence-building measures. The Association of South East Asian Nations (ASEAN) Regional Forum (ARF), while not as far

along as the OAS, is also considering a series of regional confidence building measures that could affect the USG.

Annex 1B of the Dayton Peace Accords, which entered into force in December 1995, involve the Organization for Security and Cooperation in Europe (OSCE) in regional negotiations to craft a series of CSBMs and arms control measures which affect the former Republic of Yugoslavia states. As mandated by Article II of that Annex, the Parties reached agreement in January 1996 on CSBMs for Bosnia-Herzegovina. In June of that year, the parties adopted sub-regional arms control measures (mandated by Article IV of that same Dayton annex), including numerical limits on certain categories of armaments and military manpower.

The Article IV agreement has involved the United States in a number of implementation roles, *e.g.*, as a guarantor, as a provider of implementation equipment, and as a trainer for regional implementers. In November 1998, the OSCE developed a mandate for Article V, regional arms control negotiations. A breakthrough in these follow-on negotiations may require DoD to provide technical assistance for the negotiations and/or more direct implementation support. Such unprogrammed, immediate requirements may also affect existing budgets.

2.3 PROGRAM GUIDANCE

The National Security Strategy submitted to Congress by the President in December 1999, entitled "A National Security Strategy for a New Century," names arms control as one of the means to shape the international environment to increase the security of our citizens and prevent or limit conflict.

If arms control initiatives are to shape the international environment favorably to U.S. interests and global security, then the following objectives must be met:

- Preserving the operational flexibility required by national planning documents;
- Ensuring confidence in compliance through effective monitoring and verification;
- Providing full and faithful implementation of existing arms control agreements;
- Preparing to promote, help negotiate, monitor and participate in regional arms control undertakings compatible with American national security interests;
- Seeking greater transparency, responsibility and, where appropriate, restraint in the transfer of conventional weapons and dual-use technologies; and
- Protecting DoD equities (*e.g.*, safety, national security information and environmental concerns).

To meet these objectives, the DoD program must ensure effective and timely technical support and equipment is made available for inspection and monitoring activities, assist in assuring U.S. compliance with the provisions of arms control treaties and agreements, and provide the resources necessary for effective implementation and compliance.

The O&M and Procurement programs will provide the resources to ensure full and faithful implementation of existing arms control treaties and planning and preparation for the implementation of treaties and agreements expected to enter into force.

Consistent with the overriding goal of protecting DoD equities and safety and environmental concerns, the RDT&E programs will:

- Give high priority to providing technical support for USG delegations engaged in treaty and agreement negotiations;
- Provide continuing technical assessments and verification analyses;
- Ensure effective and efficient improvements to, and expansion of, data management capabilities;
- Invest in the development of a technology base to support a range of options for promising new arms reduction regimes and control measures; and
- Develop the equipment and tools required to support the U.S. Government's implementation of and compliance with arms control treaties and agreements.

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SECTION 3

PROGRAM DEVELOPMENT

3.1 INTRODUCTION

Obligations created by arms control treaties and agreements drive the structure and content of the DoD Arms Control Program. One need arising from these obligations is to ensure that DoD can help provide the wherewithal for the USG to assess whether or not other governments are complying with their obligations under these treaties and agreements. A second need is to ensure that the United States is compliant with those treaties and agreements while assuring the proper protection of national security and proprietary information.

The Arms Control Program must address the need for systems and equipment, as well as trained personnel, facilities, and O&M resources, to meet these compliance obligations and treaty verification responsibilities. Systems and equipment for these purposes are provided by the arms control RDT&E and Procurement Programs, while the O&M Program provides trained personnel, facilities, and other O&M resources.

3.2 OPERATIONS AND MAINTENANCE (O&M) PROGRAM

The O&M Program provides the trained personnel, facilities, and operating funds to accomplish the DoD arms control mission. Efforts under this program are described in terms of the resources required for the individual treaties and agreements. Allocated resources provide for manpower in addition to implementation planning, preparation, and execution. These implementation activities include, but are not limited to: development of plans and procedures; data collection; formatting and dissemination; implementation readiness training; and inspection, escort, monitoring, observation, and training/mock inspection missions. Allocated Resources also provide for treaty compliance training for units and site/installation personnel. Expenses associated with hosting foreign nationals during their implementation activities at U.S. facilities are also included. The O&M Program is reported by treaty area and by Service or Agency.

O&M resource requirements are computed by each Service/Agency using prior year execution, scheduled inspections, and the Arms Control Planning Assumptions (see Appendix C). The planning assumptions provide Services/Agencies with the expected date of entry into force; numbers of inspections or observations to be performed in the next year and how many should be planned for at Service facilities; data reporting and information exchange requirements that are manpower intensive to satisfy; etc. These planning assumptions are fundamental to developing and maintaining accurate resource requirements applicable to all treaty areas, in the negotiations phase, and in the early stages of operations before and just after treaty EIF.

The DoD Components track arms control O&M funding by treaty area. As directed, the Services further subdivide their funding into at least four general categories: Notification Systems; Planning/Preparations/Technical Support; Mission Operations/Facility Support; and Elimination Activities.

Notification Systems - This category typically contains data analysis, computer systems analyses, and manpower and contractor pay directly applicable to supporting existing computer systems.

Planning/Preparations/Technical Support - This category typically contains the planning and preparations for implementing the treaty or agreement. These activities include: training to maintain readiness capability both for inspectors who will be inspecting other nations, and for personnel who will be receiving inspections at their facilities; preparations for mock/training and actual inspections for non-sensitive sites and sensitive sites/programs; manpower support for planning, preparations, and oversight activities; analyses to support the issues and policy implications surrounding implementation of treaties and agreements; transportation and TDY supporting preparations; database searches; and equipment transportation.

Mission Operations/Facility Support - This category contains all of the facility preparations needed to support implementation activities, such as inspections, transportation, and base support costs associated with boarding during an inspection. Facility and equipment maintenance costs, mission support flights, and aircraft flying hours are also included in this category in support of mission operations. Civilian salaries and overtime may be included in this category to support either mission operations or facilities support for inspections, or continually to support maintenance requirements.

Elimination Activities/Weapons Systems Modifications - Elimination activities include activities to dismantle, destroy, or otherwise eliminate or modify nuclear, chemical, and conventional weapons or other treaty-limited equipment. Elimination activities are typically treaty driven events, while many weapons systems modifications are typically user/developer driven events.

3.3 PROCUREMENT PROGRAM

The Procurement Program describes the planned use of resources designated for system acquisition necessary to support an inspection or observation regime.

3.4 RDT&E PROGRAM

As with other DoD RDT&E programs, validated requirements for equipment, hardware, software, assessments and technological options are the foundation of the arms control RDT&E

program. Validated requirements must address the mission needs of users to verify and comply with existing or emerging regimes and treaties.

Needs and requirements often initially arise during the negotiation of arms control measures. As the treaty text evolves during negotiations, so too do technology needs. Negotiators often need rapid analyses of technical issues to help refine treaty provisions based on the realm of the possible. As a result, negotiators (including OUSD(Policy) and Joint Staff representatives) and the implementation planners, (typically the OUSD(AT&L) Treaty Managers) must work closely together in defining requirements during the negotiation process if the United States is to be ready to implement the resultant agreement.

Not all mission needs and requirements are defined during negotiations. Needs identified by the operators/implementers--the Agencies, CINCs and Services that actually conduct inspections, host them, or implement treaty provisions--are another source of mission needs and requirements.

The OUSD(AT&L) Treaty Managers have a forward-looking role in the RDT&E program. They generate needs for technology application studies to identify new and promising concepts for achieving likely future arms control regimes and technology development activities as needed to show that the technology is ready to support such regimes.

Additionally, when needed, Treaty Managers establish Treaty Implementation Working Groups (IWGs) and Compliance Review Groups (CRGs) in accordance with DoD Directive 2060.1. The IWGs coordinate required Service/Agency implementation and compliance planning, and help develop implementation planning guidance, planning factors and specific milestones. The CRGs provide forums to resolve technical and legal questions pertaining to compliance, which can also affect funding plans.

3.5 FY 2000-2001 BUDGET

The Arms Control Budget Implementation Working Group (BIWG), chaired by ACI&C, provides a forum to discuss the development of arms control budgets and address budget issues. Through the Group, the Program Element Monitor (PEM) obtains the information needed to oversee the arms control budget.

The following tables for FY00 and FY01 outline budgets developed by DoD Services/Agencies in response to USG and DoD guidance to meet specific arms control implementation and compliance obligations.

ARMS CONTROL FUNDING OVERVIEW FY00								
As of Feb 2000								
\$ in Millions								
Service/Agency:	Army	Navy		Air Force	DTRA			
Program Elmt:	411145	35145N		35145F	32199BR	63711BR		
Appropriation:	O&M	O&M	PROC	O&M	O&M	RDT&E	PROC	MILCON
Treaty/Treaty Area								Total
ABM	.241							
BW	1.621	.281						
CFE/VD	7.500			1.080	2.976			
NUCLEAR				.696	.373			
CW	15.251	1.968		.049	5.275			
INF	.674	.601	7.400	.121	6.696			
Open Skies	.080	.728		5.723	2.227		.692	
START	1.301	25.835		12.771	8.125			
START II			5.200	.217	.069			
APL/CCW								
ICP					4.403			
Other		2.403		3.233	21.614			
Arms Control Tech:					1.766			
Conventional						7.687		
Strategic						9.875		
Chem/Bio						10.421		
Nuclear						45.545		
Total:	26.668	31.816	12.6	23.890	53.524	73.528	.692	
								222.718

ARMS CONTROL FUNDING OVERVIEW FY01								
As of Feb 2000								
\$ in Millions								
Service/Agency:	Army	Navy		Air Force	DTRA			
Program Elmt:	411145	35145N		35145F	32199BR	63711BR		
Appropriation:	O&M	O&M	PROC	O&M	O&M	RDT&E	PROC	MILCON
Treaty/Treaty Area								Total
ABM	.254							
BW	1.673	.553						
CFE/VD	7.913			1.232	2.937			
NUCLEAR				.624	.388			
CW	12.614	2.008		.575	5.532			
INF	.683	.492	5.600	.093	6.778			
Open Skies	.203	.862		8.790	2.288			
START	1.293	26.144		21.232	9.398			
START II				.763	.070			
APL/CCW	.077							
ICP					5.884			
Other	.098	2.171		3.878	24.182		.500	2.450
Arms Control Tech:					5.854			
Conventional						7.323		
Strategic						10.150		
Chem/Bio						11.541		
Nuclear						23.103		
SBIR						.813		
Total:	24.808	32.230	5.6	37.187	63.311	52.930	.500	2.450
								219.016

Total FY00	
RDT&E	73.528
O&M	135.898
PROC	13.292
MILCON	0.000
Total	222.718

Total FY01	
RDT&E	52.930
O&M	157.536
PROC	6.100
MILCON	2.450
Total	219.016

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SECTION 4

MAJOR FY99 PROGRAM ACCOMPLISHMENTS

4.1 CONVENTIONAL ARMS CONTROL (CAC) PROGRAM

Major accomplishments in FY99 were:

- **O&M**

- Army

- Vienna Document

- Provided USAREUR Arms Control Officer Support for Russian Vienna Document Inspection in the Former Yugoslavian Republic of Macedonia.
 - Provided USAREUR Arms Control Officer support for a Russian Vienna Document Inspection in Albania.
 - Provided USAREUR Arms Control Officer support for an OSCE Participating States Vienna Document Observation in FYROM
 - Provided USAREUR Arms Control Officer support for a Russian Vienna Document Inspection in Greece
 - Provided USAREUR Arms Control Officer support for a Slovak Vienna Document Inspection in Germany

- CFE

- Prepared 10 declared sites and assisted 10 units in support of 9 CFE Inspections.
 - Prepared USAREUR units located at Hungarian Declared Site for 2 CFE Inspections.
 - Conducted 23 training evaluation inspections to prepare declared sites and 37 units (OOVs) for CFE Inspections.
 - Conducted 3 training inspections in conjunction with DTRA and other states parties.

- Open Skies

- Tested notification procedures during CONUS Joint Trial Flights
 - USAREUR supported one Open Skies Overflight in Germany.

- Navy

- Executed DoN awareness training program.

- Conducted five DoN Arms Control Treaty Seminars for fleet activities; MCB Camp Lejeune, NC; Naval Base San Diego, CA; Naval Station Roosevelt Roads, Puerto Rico; Naval Base Pearl Harbor, HI; Naval Forces Korea.

Open Skies

Exercised and tested DoN Open Skies notification procedures and readiness during:

- One Blue-on-Blue training flight
- Five JTFs
- 20 Open Skies video teleconference call training sessions with 47 Navy commands.

Air Force

CFE

Supported four CFE inspections during the Kosovo campaign, including hosting a Russian CFE inspection team at Aviano AB, Italy in May 1999 at the height of operations.

Vienna Document

Supported two Vienna Document inspections in Macedonia and Albania and one Vienna Document evaluation during the Kosovo campaign.

Open Skies

Supported:

- 16 Joint Trial Flights,
- One Blue-on-Blue exercise,
- Several data collection flights,
- One static display at an air show at Andrews AFB,
- USGS in mapping Central America following Hurricane Mitch in November/December 1998,
- Tinker AFB Commander in mapping the tornado damage in Oklahoma in May 1999 for their disaster preparedness program.

DTRA

Vienna Document

- Conducted Vienna Document evaluations in Turkmenistan and Kazakhstan.
- Escorted the Russians during Vienna Document evaluations in the Former Yugoslavian Republic of Macedonia.
- Participated in 4 NATO-led Vienna Document evaluations.

- Supported EUCOM, the United Kingdom and the Former Yugoslavian Republic of Macedonia (FYROM) during a Vienna Document observation of NATO troops in FYROM.

CFE

- Conducted 16 inspections and 4 escort missions (involving 8 US sites in Germany).
- Conducted 9 training inspections in support of EUCOM.
- Conducted 3 reduction missions in Russia.
- Conducted 33 liaison missions in support of bilateral agreements with other States Parties.
- Hosted a European Arms Control Workshop in Germany, inviting inspection personnel from the new NATO allies and select Partnership for Peace nations. The goal of the workshop was to present U.S. arms control procedures and to provide an open forum for the exchange of ideas and viewpoints.

Open Skies

The United States completed 16 Joint Trial Flights (JTF) in FY99. Listed below are some of the highlights. The year included normal trial flights with France, Italy, Czech Republic, United Kingdom, Bulgaria, and Greece. The following “non-routine” activities are explained in a little greater detail.

- Workshop in Sweden- Sweden expressed an interest in joining the Treaty after entry into force. They requested a description of the U.S. program and a conceptual view of possibilities for their own program.
- United States over Romania JTF-First overflight of the OC-135 in Romania.
- Ukraine over United States JTF-First overflight of Alaska conducted under the Treaty.
- Finland over United States JTF-First overflight of the United States by a non-signatory to the Treaty.
- United States over the Baltics JTF-Trial flight provided Latvia, Lithuania, and Estonia with a first-hand look at how the Treaty on Open Skies is applied.
- United States over the WEU JTF-Trial flight was conducted over Germany, France and Spain. The overflight demonstrated to Eastern European countries an economically efficient way of conducting a trial flight in Western Europe.

- **PROCUREMENT - NA**
- **RDT&E**

DTRA

1. Provided technical support (to include short-suspense and long-term analyses) to the U.S. delegations to the Open Skies Consultative Commission (OSCC), the Joint Consultative Group, the Forum for Security Cooperation, the CCW (Amended Mines Protocol II) negotiation, and regional arms control negotiations.
2. Provided treaty compliance assessments and planning support to OUSD (AT&L)/ACI&C.
3. Assessed technology requirements of potential regional arms control initiatives for the Asia-Pacific Rim and Latin America.
4. Initiated performance evaluations of current Open Skies sensors.
5. Completed IR and video sensor technology assessments and developed operational requirements for supporting the Open Skies Treaty.
6. Monitored Open Skies sensor data acquisition, reduction and analysis to support preparation for Open Skies Treaty implementation and potential future sensor technical negotiations.
7. Expanded the Arms Control Technology Reference and Display Center to include new promising arms control technologies.
8. Completed Y2K analysis, testing and fixes of the Open Skies Management and Planning System (OSMAPS) and certified the system as Y2K compliant.
9. Initiated assessments of technologies potentially applicable to wide-area detection (WAD) of Anti-Personnel Landmine (APL) minefields.
10. Continued development of a standard digital format for Open Skies digital sensors data.
11. Completed planned Open Skies Management and Planning System (OSMAPS) baseline updates, modifications and independent verification and validation (IV&V) of associated software
12. Continued development of the Regional Inspection Simulation Tool (RIST) and demonstrated the developmental system at the U.S. State Department and at the DTRA Arms Control Conference.
13. Demonstrated the prototype of the Microbial Mine Detection System (MMDS).
14. Initiated Microwave Radar Algorithm (MRA) effort for Wide Area Detection (WAD) and mapping of Anti-Personnel Landmines (APL) minefields.
15. Conducted assessments of technologies to support ongoing or emerging conventional arms control negotiations and peacekeeping requirements for monitoring and completed assessment of agreements on antipersonnel landmine needs.
16. Continued work on preliminary assessments of international developments regarding the Small Arms/Light Weapons (SA/LW) issue.
17. Coordinated on Asia/Pacific Rim security issues with PACOM representatives.

18. Continued emerging technology investigations for future treaty requirements through cooperative efforts with industry, academia and national laboratories.
19. Initiated interagency working group evaluations and information exchange applicable to wide-area detection (WAD) of Anti-Personnel Landmines (APL) minefields.

4.2 STRATEGIC ARMS CONTROL (SAC) PROGRAM

Major accomplishments in FY99 were:

- **O&M**

Army

START

1. No inspections were conducted at U.S. Army facilities.
2. Camp Navajo SLBM Storage Facility, AZ received the last Trident I first stage from Strategic Weapons Facility Atlantic-Detachment (SWFLANT-Det), Goose Creek, SC, on September 22, 1999.
3. Army Combat Equipment Group-Asia (CEG-A), collaborated with SWFLANT-Det as a close-out inspection occurred on November 16, 1999. The facility will now be susceptible to up to two formerly-declared facility site inspections per year. CEG-A is prepared to support all future inspection activities.
4. Provided semi-annual update notifications on Polaris A-3 SLBM “former types” used in the Army’s Strategic Target System (STARS) program.
5. Maintained the capability to respond to a START SAV request at U.S. Army and government owned, contractor operated facilities.
6. Provided site assessments and assistance visits to vulnerable Army installations.

Navy

INF

1. Conducted one mock INF inspection at SPAWARSYSCEN San Diego, CA.
2. Continued support to operation of INF continuous monitoring function at Alliant Techsystems Inc., Bacchus Works, Magna, UT. Provided analytical response to claims of ambiguities concerning departing boost stages.

START

1. Maintained capability to support two START short notice data update inspections each at seven Navy facilities, two suspect site inspections at one Navy designated facility, two formerly declared facility inspections at one Navy designated facility and two RV inspections each at two Navy designated facilities.
2. Conducted mock inspections to maintain inspection readiness of facilities not receiving actual inspections during the FY.
3. Maintained the capability to support START short notice cooperative measures displays of one special purpose submarine. The USS POLK completed elimination procedures at the Puget Sound Naval Shipyard in January, 2000.
4. Provided notification of initiation of elimination of one special purpose submarine.
5. Collected, processed and provided detailed telemetry data for all Navy flight tests.
6. Successfully completed validation testing of the Portable Antenna Telemetry System (PATS) used for collection of SLBM test launch telemetry during time periods when it would not normally be required for program purposes. (PATS has been a primary data collection sensor for telemetry data provided on all Navy START flight tests.)
7. Continued planning for potential impact of START Special Access Visit at Navy and government-owned contractor-operated facilities.
8. Maintained and operated a Navy START notification system, and provided all Treaty-required notifications.
9. Coordinated operations of facility notification system and continued support, maintenance, and upgrade of current system hardware and software.
10. Supported delegation discussions on inspection issues at the Joint Compliance and Inspection Commission by providing on-site Navy technical expertise, site diagrams, engineering drawings and photographic reference materials.
11. Conducted training and coordination meeting of all Navy facility START Coordinators to review and refine reporting and inspection procedures.
12. Developed and submitted new START site diagram of Camp Navajo Depot, Bellemont, Arizona.
13. Supported designated task force discussions on development of details in the future START III Treaty.
14. Continued support to the operation of INF continuous monitoring function at Alliant Techsystems Inc., Bacchus Works, Magna Utah.
15. Coordinated with the Air Force for the redesignation, submitted notification of change in category of Oasis Complex, Utah as a Conversion

or Elimination Facility for SLBMs and ICBM, and new site diagram.
Commenced elimination of TRIDENT I first stages at Oasis Complex.

Air Force

INF

1. Supported two INF inspections at RAF Molesworth, UK and SABCA Belgium.
2. Conducted two INF accountable launches.

START

1. Maintained the capability to support two START short-notice data update inspections at 16 Air Force facilities; and, the ability to perform two RV On-site inspections at three facilities per year.
2. Conducted five on-site inspections, four data update, and one reentry vehicle on site inspection.
3. Conducted three short-notice Heavy Bomber in the Open Displays.
4. Conducted mock inspections to maintain inspection readiness of facilities.
5. Conducted five Treaty accountable launches. Collected, processed, and provided detailed telemetry data for all flight tests.
6. Conducted the first U.S. space launch using the first stage of a START accountable ICBM.
7. Added a new support equipment item for the Minuteman ICBM to the MOU.
8. Added a new space launch site at the Vandenberg Space Launch Facility.
9. Provided the technical information and presented a portion of the digital telemetry equipment demonstration.
10. Updated numerous site diagrams reflecting changes to inspectable areas.
11. Conducted training for treaty compliance officers.
12. Updated multiple site diagrams.
13. Supported delegation discussions on inspection issues at the Joint Compliance and Inspection Commission by providing on-site Air Force technical expertise, site diagrams, engineering drawings and photographic reference materials.
14. Supported designated task force discussions on development of details in the future START III Treaty.
15. Maintained and operated an Air Force START notification system, and provided all Treaty-required notifications.
16. Transitioned the system to SIPRINET which improved the efficiency and effectiveness of the system.
17. Ensured that the START notification system passed Y2K without incident.

18. Continued support, maintenance, and upgrade of the current systems hardware and software.
19. Performed unit assistance training for the notification training.
20. Completed preliminary efforts for the elimination of the 150 Minuteman III silo launchers at Grand Forks AFB, ND.
21. Eliminated 15 LRNA heavy bombers and 1 Non-LRNA heavy bomber.

- **PROCUREMENT:**

- **Navy**

- **START II**

1. Continued procurement of additional RV ballasts, initial procurement of RV covers and fire control targetry changes, and RV containers to support the projected download of U.S.-deployed SLBMs to meet START II intermediate warhead limits.

- **RDT&E**

- **DTRA**

1. Provided technical support to the START Joint Compliance and Inspection Commission and START follow-on discussions.
2. Developed and initiated Joint DoD/DOE Integrated Technology Implementation Plan for assessment and presentation of systems recommendations for START III, Mayak Transparency Regime and Trilateral Initiative.
3. Completed Future Strategic Arms Control Technology Requirements Study and Systems Survey.
4. Modified and Improved pre-existing Automated Fissile Material and Nuclear Weapons Lifecycle Demonstration Project for use as negotiation, RDT&E options prioritization and requirements definition tool.
5. Completed Feasibility Assessment of Combined Offense-Defense Strategic Arms Control & Deterrent Stability Regime.
6. Conducted Senior-Level Symposia on technological aspects of ABM Treaty compliant NMD and TMD system RDT&E and deployment.
7. Developed ABM Treaty-related negotiation options for RDT&E and deployment of NMD systems.
8. Initiated study to identify and promulgate compliance standards for arms control treaty-related developmental limitations on ballistic missile defense system airborne targets.

9. Completed SBIR Phase I (concept validation) and Initiated SBIR Phase II (design and testing) of innovative Gamma Radiation Detector utilizing unique megapixel technology.
10. Completed the Inspection Aids and Tools Assessment to develop a system architecture for arms control treaty monitoring.
11. Completed the Heat Sensor project to demonstrate thermal sensor monitoring of nuclear materials.
12. Completed the Passive Infrared Imaging of Nuclear Weapons Project to demonstrate infrared techniques for nuclear warhead identification.
13. Completed the design phase for a Micro-machined Integrated Neutron Detector.
14. Completed Phase II of the Object Pattern and Recognition project.
15. Completed Millimeter Wave Nuclear Warhead Identification Technology project.
16. Completed the Authenticated Tracking and Monitoring System project to demonstrate an integrated technology for high confidence, long-range supervision of sensitive nuclear cargo shipments.
17. Completed Ultraviolet Air Scintillation emerging technology laboratory experiment in cooperation with US Army Space and Missile Defense Command.
18. Co-chaired the Joint DoD/DOE Integrated Technology Working Group on Radiation Technology, Remote/Unattended Monitoring, Alternate Technology and Tags/Seals.
19. Initiated Cooperative Technology Initiative Project (through the International Science and Technology Center) with Russian Laboratories on cooperative research in strategic arms control regime monitoring.
20. Designed software architecture for a potential integrated Arms Control Information Notification System (ACINS).
21. Completed development of a room temperature, moderate resolution, hand-held zinc-cadmium-telluride radiation detector.
22. Initiated Interagency Working Group evaluations of candidate radiation detectors, remote and unattended monitoring systems, and tag/seal technologies for use in a potential START follow-on regime.
23. Provided technical assessment and advisory support to Inter-agency Sub-Committee on Nuclear Export Controls review of sensitive nuclear fuels and technology transfers.
24. Provided technical assessment and advisory support to DoD on issues of nuclear technology transfer.
25. Represented DoD on US diplomatic delegations to Nuclear Suppliers Group Proliferation Control Regime and Zangger Advisory Committee to IAEA Board of Governors.

4.3 CHEMICAL WEAPONS (CW) ARMS CONTROL

Major accomplishments in FY99 were:

- **O&M**

- **Army**

- CWC Implementation Preparation
 1. Maintained OPCW sample analysis certification for Edgewood Chemical Biological Forensic Analytical Center (former Treaty Lab).
- CWC Declarations
 1. Submitted Plans for 2000 Chemical Weapons Destruction, Chemical Weapons Production Facilities Destruction, and Schedule 1 Activities.
 2. Submitted Reports for 1998 Chemical Weapons Destruction, Chemical Weapons Production Facilities Destruction, and Schedule 1 Activities Report.
 3. Finalized Transitional Verification Agreements (TVAs) for Chemical Weapons Destruction Facilities with the OPCW.
- CWC Inspections
 1. Completed inspections at 28 declared sites, including 13 chemical storage facilities, 13 former production facilities, and 2 Schedule 1 production facilities.
 2. Completed continuous monitoring at 2 Chemical Weapons Destruction Facilities, plus temporary periods of continuous monitoring at 3 other facilities.
 3. Completed close out inspection at former Schedule 1 Facility, and initial inspection at its replacement.
 4. All Binary munitions destroyed, ahead of CWC deadline.
 5. 16% of U.S. Chemical Stockpile destroyed.
- CWC Mocks/Site Assistance Visits
 1. USAREUR conducted an assistance visit to Camp Doha, Kuwait to assist ARCENT Kuwait Staff in CWC Challenge Inspection preparations.

- **Navy**

- CWC Implementation Preparation
 1. Completed initial development of naval facilities database. The database integrates facility data from naval facilities worldwide with graphical representation of facility site diagrams.

2. Established an alternate operations center at NSWC, Indian Head in the event of a disaster resulting in loss of the Naval Treaty Implementation Program (NTIP) Treaty Operations Center.
 3. Executed a DON Tiger Team Training Plan. Conducted classroom instruction, walk through demonstrations, small-scale field exercises, notification drills, and team coordination seminars.
- CWC Declarations
 1. Prepared and submitted the annual Marquardt Company, Van Nuys, CA. data declaration.
 - CWC Inspections
 1. Hosted one systematic inspection (5-6 Oct 98) by the OPCW of the converted former CW Production facility at the Marquardt Company, Van Nuys, CA.
 - CWC Mocks/Site Assistance Visits
 1. Conducted CWC site assessment visits in Puerto Rico and the Republic of Korea.

Air Force

- CWC Implementation Preparation
 1. Activities included training Air Staff, Base Assistance Team (BAT), and MAJCOM Treaty Compliance Officers (TCO), and Unit level personnel to manage a CWC-related challenge inspection.
- CWC Declarations
 1. Air Force has no declared equities under the CWC.
- CWC Inspections
 1. Air Force has not had any inspections under the CWC.
- CWC Mocks/Site Assistance Visits
 1. Developed and conducted numerous USAF Major Command-oriented SAV's including one visit to an USAF government owned contractor operated (GOCO) facility that focused on CWC implementation and compliance and management of CWC-related challenge inspections.

DTRA

- CWC Implementation Preparation
 1. Supported the Interagency Task Force and the U.S. Delegation in The Hague.
 2. Maintained liaison and support of the Department of Commerce preparations to implement CWC inspections of commercial facilities through a MOA.
 3. Supported the CW Destruction Support Office and Cooperative Threat Reduction Program CW missions.

- CWC Inspections
 1. Conducted 39 escort missions to 10 former CW production facilities, 11 CW storage facilities and 3 Schedule 1 facilities.
 2. Maintained escort detachments to support 5 CWC continuous monitoring sites at Johnson Atoll Chemical Disposal System (JACADS), Tooele Chemical Disposal Facility (TOCDF), Chemical Agent Disposal System (CAMDS), Hawthorne Army Depot (HWAD) and Aragonite commercial facility.
 3. Conducted 2 CWC initial visits/short term destruction monitoring escort missions to newly developed CW destruction facilities in support of the U.S. Army Program Manager for Chemical Demilitarization's Non-Stockpile Program and the congressionally mandated Assembled Chemical Weapons Assessment (ACWA) Program.
- CWC Mocks/Site Assistance Visits
 1. Supported 1 inspection exercise simulating a CWC declared-facility inspection at a military facility in the United States.
 2. Supported 1 major exercise at a commercial (Schedule 2) chemical plant in the United States in support of the Department of Commerce.
- CWC Training
 1. Revised and refocused the DTRA MOD II and III courses of instruction.
 2. Conducted the Chemical Technology Security Course of instruction at the Naval Surface Warfare Center, Indian Head, Maryland.
- **RDT&E**

DTRA

1. Completed proof of concept and data collection on advanced non-destructive evaluation technology concept (ultrasonic remote assay of munitions (URAM)).
2. Initiated vapor testing of minicams for lewisite detection.
3. Completed independent testing and validation of rapid CW microspot screening kit.
4. Completed hardened field version of the Swept Frequency Acoustic Interferometer (SFAI) instrument for non-destructive evaluation, and demonstrated the technology in several Government and public venues.
5. Completed development of prototype mini-Portable Isotopic Neutron Spectroscopy (PINS) instrument.
6. Completed alpha testing of Automated Mass Spectral Deconvolution Identification System (AMDIS) and modified software to include chemical class and retention indices.

7. Provided technical support to CW Treaty Manager, OSD Policy and Army in preparation for CWC Executive Council Sessions and the Conference of States Parties.
8. Participated in the Organization for the Prohibition of Chemical Weapons (OPCW) technical working groups, including those involving analytical data base spectral validation and on-site analytical procedures, to identify data gaps.
9. Delivered updated CW treaty reference collection.
10. Conducted an initial test of a new data management technique to satisfy current BWC Confidence Building Measures (CBMs), and potential reporting requirements under the CWC.
11. In collaboration with Finland, updated analytical methods for sample collection and preparation to facilitate Chemical Weapons Convention (CWC) inspection efforts.

4.4 BIOLOGICAL WEAPONS (BW) ARMS CONTROL

Major accomplishments in FY99 were:

- **O&M**

- **Army**

- BW Implementation Preparation
 1. Continued planning and preparation for possible verification activity under the US/UK/Russian Statement on Biological Weapons.
 2. Continued planning and preparation for required declarations and visits under a possible Biological Weapons Convention (BWC) Protocol still under negotiation.
 3. Submitted BWC Confidence Building Measures data for ultimate delivery to the UN , per international agreement.
 4. Provided technical support to U.S. negotiators in the Ad Hoc Group (AHG) discussions on a proposed BWC Protocol.
 5. Developed databases of possible Military Biological Facilities (MBFs) for use in any new BW agreements.

- **Navy**

- BW Implementation Preparation
 1. Continued planning and preparation for anticipated visits to military biological facilities pursuant to the Joint US/UK/Russian Statement on Biological Weapons.

2. Updated and prepared all required documentation for DON sites including BWC CBM submissions, Military Biological Facility (MBF) briefing packets and Host Team reference packages.
 3. Provided support to the OSD/Joint Staff BWC Ad Hoc Group meetings for DoD Contractors.
- BW Mocks/Site Assistance Visits
 1. Conducted liaison visits.

Air Force

- BW Implementation Preparation
 1. Activities included refining guidance concerning BWC-related confidence building measures submissions for USAF declared equities.
- BW Mocks/Site Assistance Visits
 1. Conducted SAVs to the USAF Chemical-Biological Defense Division, Aberdeen Proving Grounds; the Holloman AFB Fast Track, Holloman AFB New Mexico; the Wright Laboratory Directorate, Eglin AFB, Florida.

DTRA

- BW Implementation Preparation
 1. Supported the interagency BWC backstopping group in ongoing negotiations on a legally binding protocol for the BWC.
- **RDT&E**

DTRA

1. Developed an on-line BW-related historical database to provide OSD Policy with search and retrieval capability.
2. Developed a database on U.S. DoD Bio-Defense Facilities to assist negotiators at Ad Hoc meetings to assess U.S. DoD vulnerabilities and to identify impacts of proposed investigation methodologies.
3. Developed a data management system of BWC-related reference material (Agents of Biological Origin (ABO) Database).
4. Updated BW histories database, archived relevant historical documents, and initiated inclusion of current Biological Defense information into the database.
5. Provided technical support during BWC bilateral discussions with Allies and negotiations at the 15th BWC Ad Hoc Group meeting in Geneva.
6. Provided technical analysis and vulnerability assessments on implementing the BWC protocol.

7. Identified information processing requirements and data management techniques to satisfy potential reporting requirements under the BWC.
8. Conducted an initial test of a new data management technique to satisfy current BWC Confidence Building Measures (CBMs), and potential reporting requirements under the CWC.

4.5 NUCLEAR TREATIES AND AGREEMENTS

Major accomplishments in FY99 were:

- **O&M**

- **Army**

- **Navy**

1. Participated in IWG meetings and provided DoN positions on IWG staffing for CTBT, IAEA/SSSP, and FMCT emerging treaties.
2. Conducted DoN treaty awareness training.
3. Updated the Draft DON CTBT Compliance and Implementation Management Plan.
4. Initiated vulnerability assessments to identify impact of IAEA/SSSP on DON programs co-located with DOE or NRC facilities.

- **Air Force**

- CTBT Implementation Preparation
 1. Activities included further refining the AF CTBT Implementation and Compliance Plan based upon lessons-learned from table-top exercises.
- CTBT Mock/Site Assistance Visits
 1. The Air Staff produced an after-action report on a CTBT tabletop exercise conducted at Nellis AFB in June 1998 and conducted a follow-on tabletop exercise at Hill AFB in July 1999. Both exercises stressed inter-organizational dynamics between the base and headquarters level actors while focusing on logistics and managed access issues. Lessons learned from these exercises, the first of their kind within DoD, have been forwarded to DoD policy makers to aid in further development of DoD position concerning CTBT implementation.
- IAEA Strengthened Safeguards System Protocol (S3P) Implementation
 1. The Air Force assisted the DoD Nuclear Safeguards Implementation Working Group in conducting a comprehensive assessment of DoD equities at declared inspectable facilities.

DTRA

1. Operated and maintained stations for the International Monitoring System (IMS). These stations included the auxiliary seismic stations at Tuckaleechee Caverns, Tennessee, and at Pinon Flat, California, as well as the hydroacoustic station at Wake Island.

• **RDT&E**

NTPO/DTRA

• **IMS Development**

1. Conducted instrumentation upgrades at Mina, NV and Lajitas, TX primary seismic arrays;
2. Conducted a Mock Certification Visit at the Mina, NV primary seismic array;
3. Conducted a noise survey at the Pinedale, WY primary seismic array;
4. Executed the procurement of an Auxiliary Seismic Data Acquisition System;
5. Conducted radionuclide site surveys, procured instrumentation and installed radionuclide particulate equipment at Sacramento, CA, Sand Point, AK, Salchaket, AK, Oahu, HI, and Upi, Guam;
6. Submitted the radionuclide site survey reports for Sacramento, CA, Sand Point, AK, Midway Islands; Salchaket, AK, Oahu, HI, and Upi, Guam to the Provisional Technical Secretariat (PTS);
7. Relocated and transferred radionuclide laboratory equipment from McClellan AFB in Sacramento, CA, to the Environmental Measurements Laboratory (EML) in New York, NY;
8. Conducted partial radionuclide site surveys at Midway Islands, and Wake Island;
9. Conducted an infrasound site survey at Hawaii, HI and submitted the final report to the PTS;
10. Conducted a preliminary infrasound site survey at Wake Island, Pinon Flat, CA, and Newport, WA;
11. Conducted a Joint Training Visit with the PTS as a training exercise for the hydroacoustic network certification development at Wake Island.

• **CTBT Interface**

1. Developed and transitioned Release 2 and 2.1 of the prototype IDC software to the PrepCom and Provisional Technical Secretariat in Vienna, Austria;
2. Initiated development of Release 3 of prototype IDC software
3. Coordinated transition of prototype IDC applications software to U.S. National Data Center.
4. Provided training of PTS IDC personnel at prototype IDC and in Vienna.

5. Initiated major upgrade of continuous data protocols for delivery and reception of IMS data.
- On-Site Inspection (OSI) Development
 1. Acted as Interagency OSI Subgroup chair and ensured DoD equities were reflected in U.S. papers to be incorporated into the OSI Operational Manual;
 2. Provided substantial input for the formation of the CTBTO OSI Training and Exercise Program, including curriculum for the OSI Introductory Courses; taught a course as part of the first three CTBT OSI Introductory Courses;
 3. Provided planning, development and execution input into the first international CTBT OSI tabletop exercise;
 4. Participated in international OSI workshops, including delivering oral presentations and written papers on training and logistical issues;
 5. Reviewed OSI equipment specifications to ensure DoD equities were met.
 - PrepCom Support
 1. Provided support to the U.S. Delegation to the Preparatory Commission and its subsidiary Working Groups, through the Inter-Agency Backstopping process and by direct representation on PrepCom and Working Group Delegations;
 2. Addressed issues raised in the PrepCom and Verification Working Group on IMS station specifications, location, operational manuals, installation schedules and certification;
 3. Served as Program Coordinator under the Chairman of Working Group B to facilitate the transfer of IDC software and procedures from the prototype to the PTS in Vienna, Austria
 - Basic Research and Development
 1. Announced a Program Research and Development Announcement (PRDA) for CTBT research and development for funding FY00 that resulted in the receipt of 84 proposals;
 2. Managed the continuations of an additional 21 contracts and 9 grants let in a similar PRDA in FY98;
 3. Managed the continuations of an additional 23 contracts and 7 grants let in a similar PRDA in FY97;
 4. Managed a bilateral agreement with the Special Monitoring Service (SMS) of the Russian Ministry of Defense to obtain seismic calibration data from nuclear explosions for the purpose of improving U.S. capability to monitor a CTBT, and reported (jointly with SMS) results of the effort to Working Group B of the CTBT PrepCom;
 5. Visited Israel to discuss possible cooperation in seismology in the Middle East, including a calibration shot in the Dead Sea;

6. Provided technical support to the Air Force Technical Applications Center on specific nuclear test monitoring issues.
- IAEA Strengthened Safeguards System Protocol (S3P) Implementation
 1. Directed vulnerability assessments of DoD programs at seven DOE nuclear weapon facilities.
 2. Coordinated the DoD participation in the National Counterintelligence Center (NACIC) interagency counterintelligence and security risk assessment of the Strengthened Safeguards System Protocol (S3P).
 3. Chaired the Nuclear Safeguards Implementation Working Group (NS-IWG) and its Facility Review and Implementing Guidance Subgroups and directed its efforts to coordinate DoD planning, programming, budgeting, and guidance for implementing the S3P.
 4. Developed a draft outline of requirements for guiding DoD implementation of the S3P.
 5. Participated in interagency deliberations on U.S. implementation and compliance issues for S3P: IAEA Steering Committee, Subcommittee on International Safeguards and Monitoring (SISM), and Subgroup on Implementing Safeguards in the U.S. (SISUS).
 6. Participated in bilateral discussions with the IAEA and with Japan, on S3P issues.
 - DoD Technical Support to the IAEA
 1. Met with and briefed the new Deputy Director General, IAEA Department of Safeguards on DoD nuclear nonproliferation technologies.
 2. Established a formal umbrella task agreement to provide DoD technical support to the IAEA through the U.S. Support Program.
 3. Coordinated a demonstration of a DARPA developed Video Surveillance Monitoring technology to IAEA Operations representatives.
 4. Participated in the interagency Subgroup on Safeguards Technical Support (SSTS) and the U.S. Support Program (USSP) to the IAEA. Attended the USSP review meetings with the IAEA.
 - Fissile Material Cut-off Treaty (FMCT) support
 1. Provided technical expertise to support OSD Policy in FMCT bilateral discussions with the French.
 2. Reviewed and coordinated on draft FMCT verification protocols used in FMCT discussions with the P-3 nations.

4.6 ARMS CONTROL INFORMATION PROCESSING

Major accomplishments in FY99 were:

- **O&M**

- Army**

- 1. Fielded CMTS Version 2.01 and DMRS Version 2.0.

- Navy**

- 1. Converted various CW related DON historical documentation to electronic format and implemented this information into an MS SQL Data Base. This implementation created a means for rapid retrieval of key information and possible reproduction as required in support of issue resolution during a future CWC challenge inspection. Developed a similar, stand alone Treaty Library Data Base System for classified data.

- Air Force**

- 1. Fielded CMTS Version 2.1 and DMRS Version 2.0. Participated in ACINS development, defining systems requirements.

- DTRA-CMTS**

- 1. Implemented Y2K compliant COTS software and resolved application specific date related software and communications platforms. No Y2K glitches experienced as a result of the millennium rollover.
 - 2. Established a comprehensive training program to augment DTRA provided treaty courses.
 - 3. Drafted CFE Adaptation formats and protocol on notification and exchange of information to support CFE Adaptation negotiations.
 - 4. Establishment of a CMTS Web site as part of the unclassified DTRA home page to facilitate dissemination of CMTS program and arms control information.
 - 5. Establishment of a CMTS Web site as part of the DTRA SIPRNet home page to facilitate dissemination of CMTS program and arms control information.
 - 6. Vienna Document 99 Agreement formats drafted and modification made to CMTS to support negotiated changes.
 - 7. Generated scenarios to exercise START Reporting System (STARS) to support START II treaty.
 - 8. Implemented CMTS Version 2.1 in October 1999
 - 9. Provided support to OSCE Configuration Control Board.

10. Integrated International Chart Printing software to support guidance on providing greater transparency in CFE reporting procedures.
11. Updated START formats.
12. Tested and implemented CFE NOFES.
13. Tested and implemented OS-NOFES.
14. Tested and implemented CSBM Word Macros.
15. Led an OSCE IPT to address Y2K issues and migrate the OSCE network to Windows New Technology (NT).

DTRA-OSMAPS

1. Implemented and tested Y2K compliant software modifications and resolved application specific date related software and communications platforms. No Y2K glitches experienced as a result of the millennium rollover.
2. Implemented and Tested Block 6 software (24 SPRs and Y2K fixes).
3. Procured new RDI portable Unix Workstations for use as the Transportable Operational Planning System (TOPS) platform.
4. Procured four 12 channel Garmin GPSs for use with TOPS.
5. Supported Active and Passive OS Missions
6. Responded to special data preparation requests to support non OS missions
7. Supported/Responded to OS/OSMAPS user requests.

- **PROCUREMENT: NA**

- **RDT&E**

DTRA

Conventional:

1. Completed the Tools and Information Needs Assessment for conventional programs for OUSD(AT&L)/ACI&C.
2. Continued development and testing of Theater Site Equipment Identification Software Module to support CFE/CSBM compliance.
3. Initiated development of the Verity Search Mapping Tool to define sites and associated assets susceptible to CFE inspection.
4. Provided CMTS operating system upgrades and performed testing to satisfy year 2000 compliance.

Strategic:

1. Completed the Tools and Information Needs Assessment for strategic programs for OUSD (AT&L)/ACI&C.
2. Performed an analysis of the ABM Treaty for data and processing requirements to assist in satisfying treaty obligations.

3. Provided CMTS operating system upgrades and performed testing to satisfy year 2000 compliance.

Chemical/Biological:

1. Completed a technical assessment of the BWC and related existing systems to determine information and notification management processing needs to meet USG implementation and compliance.
2. Designed, developed and implemented a CD-based training module for CAMIN.
3. Provided CAMIN operating system upgrades and performed testing to satisfy year 2000 compliance.

Strategic, Conventional and Chemical/Biological:

1. Initiated a Cost Benefit Analysis to evaluate the costs and operational effectiveness of alternatives to satisfy requirements for providing an integrated arms control system.
2. Initiated an Arms Control Information and Notification System concept validation to assess a standard for potential technologies of arms control information processing systems.
3. Continued to perform independent testing of software development efforts to verify proper implementation of developments and enhancements.

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SECTION 5

DoD PROGRAM SUPPORTING CONVENTIONAL ARMS CONTROL

5.1 OVERVIEW

This section focuses on the planned FY 2000-2001 support for implementation and compliance with emerging and existing conventional treaties/agreements.

5.2 ARMS LIMITATIONS IN CONNECTION WITH CONVENTIONAL ARMS CONTROL AGREEMENTS

The following Treaties, Agreements and negotiations are addressed in this program plan. Details of these are provided in Appendix B.

- The Treaty on Conventional Armed Forces In Europe (CFE) and its Agreement on Adaptation
- Confidence- and Security-Building Measures (CSBM) of the Vienna Document 1999; and the OSCE's Forum for Security Cooperation (FSC) - including the Global Exchange of Military Information (GEMI)
- The Convention on Conventional Weapons (CCW)
- U.S. Anti-Personnel Landmine (APL) Policy relating to the Ottawa Convention and negotiations in the Conference on Disarmament
- The United Nations Register of Conventional Arms (UN TIA)
- The Treaty on Open Skies
- General Framework Agreement for Peace in Bosnia-Herzegovina (Dayton Peace Accords)
- Wassenaar Arrangement
- Regional CBM/CSBM Agreements
- Small Arms/Light Weapons (SA/LW) negotiations

Activities within these treaty and agreement areas that will or could impact the conventional arms control program include:

- For the CFE Treaty and associated documents: destruction requirements East of the Urals; meeting active and passive inspection quotas for treaty limited equipment holdings and force structure; exercising the required notifications for such activities (over 80 once the Agreement on Adaptation enters into force); implementation of measures agreed to at the May 1996 review conference; resolution of issues referred

to the Joint Consultative Group (JCG); and the future implementation of the adapted Treaty (signed in November 1999).

- For OSCE agreements: implementing VD99; coordinating exchanges of military information; coordinating and executing military-to-military exchange programs; developing sub-regional stabilizing measures within Europe, particularly in Bosnia-Herzegovina and the Balkans in fulfillment of follow-on measures to the Dayton Accords; nonproliferation issues; defense conversion; developing techniques to enhance verification and prevent conflicts; establishing peacekeeping measures applicable to regional conflicts; CSBM-required annual reports on force structure, equipment holdings, and notifiable activities; conduct of a limited number of CSBM inspections, evaluations, and observation visits annually; and escorting one evaluation visit annually of U.S. forces in Europe.
- For CCW: complying with Amended Protocol II and implementation and compliance with Protocol IV, on blinding lasers. Also preparatory meetings for the anticipated Review Conference in 2001.
- APL Policy: pursuing a comprehensive and verifiable global transfer and export APL ban in the Conference on Disarmament. Seeking to identify and field APL and mixed anti-tank system alternatives. Coordinating with allies who have signed the Ottawa Convention regarding implementation of the Convention's provisions and its impact on coalition operations, planning, and peacetime transfer and storage of APL.
- For the UN TIA: annually reporting conventional arms transfers and inventories in seven designated categories of equipment; providing background information regarding military holdings, procurement through national production, and relevant policies.
- For the Treaty on Open Skies: developing, modifying, installing, and testing the required sensor suite on the OC-135B aircraft; executing unarmed aerial observation flights using designated imaging sensors, with specified resolutions and flight modalities, over the entire territory of the signatories; identifying potential improvements to the Treaty; developing arrangements for the sharing of data; adding sensors and improving the quality of the sensor data as agreed; and preparing for and receiving overflights by other states with similar equipment, including the costs of canceling or postponing high-value events affected by an overflight.
- For Regional CBM/CSBM Agreements: reporting requirements and other potential CBMs under the OAS and ARF.

5.3 CONVENTIONAL ARMS CONTROL PROGRAM GUIDANCE

Expanding on Defense guidance, the following further specify assumptions or objectives for the Conventional Arms Control Program:

- EIF of signed CAC agreements will take place without significant change or revision by all signatories.

- Verification RDT&E and other technical support will continue for ongoing and future negotiations and treaty consultative bodies.
- The FSC, which began work in September 1992, will continue to address the agreed work program. DoD will closely monitor FSC negotiations and assess the impact of proposed measures.
- Regional and peacekeeping issues related to conventional arms control will become increasingly important (e.g., OAS, Dayton Accord, Middle East arms control regimes and issues, and Northeast and South Asia arms control regimes and issues); the DoD will anticipate implementation and compliance requirements in support of regional agreements, including increasing technical support to negotiating delegations and CINCs.
- Issues related to conventional arms production and sales will grow in importance, scope, as will participation in various international organizations and entities (e.g., UN TIA, OSCE GEMI, and the Wassenaar Arrangement).
- The need for inspection technology RDT&E and assessments will continue beyond treaty/agreement EIF dates; Technical Assessments should consider a broad range of thinking on anticipated future arms control-related needs to include regional needs, non-proliferation initiatives, conventional/dual use technology transfers and APL alternatives and control. Upgrades and enhancements to inspection technologies will be pursued; however, improved equipment items for existing agreements will have to be coordinated with appropriate State Parties before use.
- Future CSBMs could be tied to increased stand-off monitoring of equipment or movements, thus requiring RDT&E of technologies to meet changing monitoring requirements;
- All DoD components will continue to update and execute appropriate compliance and implementation plans to ensure full compliance with all international arms control treaties/agreements by and following EIF.
- The USG will fully implement the Treaty on Open Skies. Upon EIF, all DoD components will be prepared to implement and comply with the Treaty on Open Skies at all affected CONUS and OCONUS installations and activities. DoD components will plan, program, and budget for the number of flights indicated in the planning assumptions for each year after EIF.
- Future discussions among the Permanent Members of the United Nations Security Council (P5) could include fairly demanding CSBMs among suppliers of conventional arms to allay fears that cheating could result in unfair competitive advantages. The DoD will continue to monitor possible implementing provisions and be prepared for compliance requirements.

5.4 CONVENTIONAL ARMS CONTROL PLANNING ASSUMPTIONS

The DoD approved assumptions are found in Appendix C.

5.5 OPERATIONS AND MAINTENANCE PROGRAM

5.5.1 INTRODUCTION

O&M funding provides the capability to plan, train, ensure readiness, and then implement treaty provisions on a routine and sustained basis throughout the program period. Until sufficient operational experience is gained as a basis for funding projections, funding estimates will be dependent upon planning assumptions. The planning assumptions (found in Appendix C) are normally issued in April and then revised twice during the year for each covered treaty and agreement. Once sufficient operational experience is gained, funding projections and estimates will be based upon service/agency input, planning assumptions, and other guidance. Funding must ensure a capability for the DoD to fully comply with the internationally agreed measures.

5.5.2 O&M SUPPORTING CFE/CSBM AND OTHER INTERNATIONAL REPORTING AGREEMENTS

5.5.2.1 DTRA

CFE/CSBM. DTRA is charged with the planning and conduct of all U.S. inspections in non-NATO nations and escort missions for inspection of U.S. forces and facilities in Europe under CFE and VD99. These include declared site, challenge inspections of specified areas, certification site, and reduction site inspection missions. The United States may be responsible for inspecting up to 20 percent of the passive quota (OOV) inspections of non-NATO sites in an adapted CFE Treaty. To accomplish these missions, DTRA leads, organizes, trains, equips, deploys, and exercises operational control over inspection and escort teams to ensure that the USG can exercise its full treaty rights for on-site inspection and to protect U.S. treaty rights with respect to inspected U.S. sites or activities. DTRA acts as the official USG representative during such missions. DTRA also provides members to participate on foreign inspection teams, and coordinates with U.S. European Command (USEUCOM), the Component Command, NATO's Verification Coordinating Committee (VCC), the OSCE Verification Operations Staff, and the inspection agencies of other participating states. DTRA participates in training/mock inspections and visits to support the CINC's and Service component command's training programs to ensure the readiness of U.S. forces and facilities to fully comply with the provisions of international agreements.

The costs and activities associated with these CFE/CSBM missions include, but are not limited to: travel; military and commercial air and ground transportation; subsistence; telecommunications; logistical support; and linguistic support. DTRA has personnel permanently stationed at European Operations in Frankfurt. In addition to its primary function of performing the CFE/CSBM missions, DTRA European Operations also serves as the point of entry (POE) for incoming inspectors of U.S. facilities in Europe under INF, and as the staging

area for U.S. inspection teams entering Russia or other countries of the former Soviet Union under all arms control treaties and agreements. DTRA also has funding and operational responsibility as the O&M Manager/system administrator for the DoD Data Management and Notifications System (DMNS). The DMNS is an automated information system that is used to help generate, approve, and transmit treaty/agreement-required notifications.

The Organization for Security and Cooperation in Europe. The OSCE is one of the most important, but sometimes least understood, components of European security today. As the only pan-European security organization, the OSCE has a crucial role to play in conquering past hostilities and building genuine cooperative security. To some, however, the OSCE is known only for its human rights advocacy as the product of the "Helsinki Process" launched in 1975. Indeed, the relationship between the full observance of human rights and security remains fundamental to the OSCE. Others think of the OSCE still in terms of its former identity as the rotating Conference on Security and Cooperation in Europe (CSCE).

In the security sphere, OSCE diplomacy plays a prominent role in arms control, mediating ethnic conflicts, preventing crises before they erupt, and in post-conflict reconstruction. The OSCE Summit held in Lisbon on December 2-3, 1996, made clear the importance of the organization to efforts underway to build a more secure, democratic and peaceful Europe. The OSCE, along with NATO, the EU and other transatlantic and European institutions, is committed to realizing the vision of a New Atlantic Community, without artificial and hostile dividing lines, where all members feel secure. As the leaders of the participating States who gathered at Lisbon unambiguously declared: "The OSCE plays a central role in achieving our goal of a common security space. Its fundamental elements--the comprehensiveness and indivisibility of security and allegiance to shared values, commitments and norms of behavior--inspire our vision of empowering governments and individuals to build a better and more secure future."

The OSCE Communications Group (CG) is an international body authorized by the Vienna Document 1999. The CG addresses questions relating to rules of procedure, working methods, formats, and any other measures to enhance the viability and effectiveness of the OSCE communications network, including issues relating to the use of modern information technologies for data exchange.

The OSCE Configuration Control Board (CCB), a subgroup of the CG, is directly accountable to the CG. The formation of the CCB was authorized by the CG in September 1996. DTRA represents the U.S. on the CCB. The CCB is accountable, through the CG, to the Forum for Security Cooperation (FSC), Joint Consultative Group (JCG), and the Open Skies Consultative Commission (OSCC), with regard to communications and information issues, related to the implementation of relevant arms control agreements. This includes primary responsibility for ensuring consistent hardware and software configuration, coordination of

integrated software releases, coordination of interfaces with other systems, and review of suggested/planned changes to the OSCE system/network.

Dayton Accords. DTRA has been tasked by the Secretary of Defense to assist the OSCE in the implementation of confidence-building and arms control measures under Annex 1-B of the Dayton Accords. These measures include support to the negotiation and implementation of Article II Confidence and Security-Building Measures and Article IV Arms Control Measures. In August 1997, DTRA developed a cooperative support program designed to improve the verification and inspection processes in the Federation of Bosnia and Herzegovina and the Republika Srpska. This program was executed during FY99 and will continue at least through FY00. In FY00, DTRA is currently scheduled for 18 assistance missions under Article IV and two inspections under Article II.

DTIRP. DTRA is the DoD Executive Agent for the Defense Treaty Inspection Readiness Program (DTIRP), which provides security countermeasure support to all USG facilities inspectable under all arms control treaties and agreements.

5.5.2.2 ARMY

The Army is charged to take all actions necessary to implement and ensure compliance with the CCW, the CFE Treaty, VD99, the UN TIA, the OSCE GEMI and the Wassenaar Arrangement at all affected Army installations, facilities, and activities. The Army will be prepared to implement and comply with applicable provisions of all regional arms control agreements, as required. The Army will also take all measures needed to assist the DoD Executive Agent (USCINCEUR) and the Service Component Commands in the implementation of and compliance with the CFE Treaty and Vienna Document 99. USAREUR is liable for up to nine CFE inspections each year, and any challenge inspections against host nations where USAREUR assets may be located. In addition, the Army is responsible for compliance with notification, reporting, and data for the Wassenaar Arrangement. If required, the Army will support annual CCW reviews, as well as APL transfer and control negotiations. In a related effort, not funded by arms control funding, the Army is the DoD Executive Agent for APL demilitarization.

Readiness training exercises will be conducted to ensure unit/inspection sites are knowledgeable of all facets of on-site implementation activities. Collective training includes USAREUR level readiness exercises and exercises with DTRA, host nations and former Warsaw Pact countries through the Cooperation Partnership Program (CPP). Individual training includes tailored training sessions for USAREUR and ASG/BSB staff in inspection/compliance procedures, attendance at the NATO school arms control course, and other related training. USAREUR will continue its site training program in FY99 and beyond. Other Army commands also conduct arms control compliance and inspection readiness training for staff, installation and site personnel.

5.5.2.3 NAVY AND MARINE CORPS

The Navy and Marine Corps program prepares for hosting foreign inspection and evaluation teams at naval facilities and organizations within the area of application. Additionally, the Navy is responsible for providing data in support of treaty/agreement reporting requirements. Reporting requirements include GEMI, UN TIA, and the Wassenaar Arrangement. For the CFE Treaty and VD99, the Navy and Marine Corps provide support to the DoD Executive Agent (USCINCEUR) through the Navy Component Commander (CINCUSNAVEUR) and Marine Component Commander (MARFOREUR).

In support of the above, the Navy performs analyses and assessments of the impacts of arms control on Navy and Marine Corps facilities, programs and operations, treaty text review and analysis to establish DON obligations, emerging treaty/agreement support and unique program security assessments. Personnel, travel and per diem costs are required for certain support activities.

5.5.2.4 AIR FORCE

The Air Force is charged with preparation for hosting foreign inspection and evaluation teams at Air Force facilities and organizations within the affected area(s) of application. Preparation includes a robust schedule of mock inspections and tabletop exercises to ensure compliance with international agreements. Additionally, the Air Force is responsible for providing data in support of treaty/agreement reporting requirements. Reporting requirements include GEMI, UN TIA, and the Wassenaar Arrangement. In coordination with DTRA, the Air Force, through coordination with USTRANSCOM, provides transportation for inspection teams where commercial transportation is not feasible. The Air Force also supports the DoD Executive Agent (USCINCEUR) and his component command, USAFE, in implementation of, and compliance with, the CFE Treaty and VD99.

For planning purposes, one actual and one mock inspection at each of five declared bases (Keflavik, Lakenheath, Spangdahlem, Ramstein and Aviano) as well as up to nine challenges at sites in Germany, Belgium, Netherlands, and Denmark require extensive travel and transportation for personnel supporting those inspections. Civilian overtime and salaries must also be paid to support site preparations and medical care, security, etc. of inspecting parties during the events to support implementation of CFE and VD99.

The Air Force is also responsible for collating and providing data in support of treaty/agreement and arrangement reporting requirements, such as CFE, VD99, the UN TIA, the OSCE GEMI, and the Wassenaar Arrangement.

5.5.3 O&M SUPPORTING OPEN SKIES

5.5.3.1 DTRA

DTRA is responsible for the planning and conduct of U.S. Open Skies overflights of foreign nations, including the operation of sensors aboard the Open Skies aircraft, and for escorting foreign observation missions over U.S. territory. DTRA acts as the official USG representative during all Open Skies missions. DTRA is responsible for conducting U.S. certification requirements, representing the United States at foreign certification events, and the procurement and maintenance of sensor calibration targets. During the first Observation Period, the United States will conduct up to eight active observation missions over Russia and one joint flight with Canada over Ukraine. The United States will receive up to four overflights from Russia/Belarus. During the initial implementation, the level of effort is expected to increase to 15 active and 15 passive observation missions per year. Once the Treaty reaches the full implementation phase, the number of observation missions per year will increase to 22 active and 22 passive, although under the terms of the Treaty, the United States is subject to up to 42 passive missions and has a right to conduct up to 42 active missions per year. Training, mock

certifications and observation missions are scheduled by the Operations and Training Coordination Sub Group of the Open Skies Implementation Working Group to ensure DoD is prepared to fully comply with the provisions of the Treaty and to adhere to flying hour guidelines and proficiency. DTRA has funding and operational responsibility for program and technical management of the Open Skies Management and Planning System (OSMAPS) and provides operational support to the Passive Overflight Module (POM), the Telephone Notification System (TNS), Operational Planning System (OPS), and the Transportable Operational Planning System (TOPS) and the Active Overflight System (AOS). Finally, DTRA is the O&M Manager/system administrator for the Open Skies portion of the DMNS, and will be responsible for initiating the notification procedures associated with foreign overflights of the U.S., and third party overflights of U.S. sites on foreign soil. DTRA is the DoD Executive Agent for the DTIRP, which provides security countermeasure support to all USG facilities inspectable under all arms control treaties and agreements. This program is especially important for preparation and notification of sites subject to overflight under Open Skies.

5.5.3.2 ARMY

The Army will take all actions necessary to implement and ensure compliance with the Treaty on Open Skies at all affected Army installations, facilities, and activities. The Army's requirements in this treaty include preparing sensitive installations, activities, and projects for an overflight through this treaty. The Army must develop and implement procedures for the timely review of CONUS Open Skies Observation Mission media.

Civilian and contractor pay and overtime will be incurred to assist in the preparation of sensitive programs for an overflight, or for the cancellation, suspension, or extension of these sensitive programs or other activities.

5.5.3.3 NAVY AND MARINE CORPS

The Navy and Marine Corps program ensures that all operational forces, organizations and facilities are prepared to receive foreign overflights at the time notified, including the passage of Open Skies aircraft through restricted airspace. The DON program contains five basic elements: 1) the development of written compliance and implementation documentation; 2) an exercise element; 3) a notification element; 4) a training element; and 5) a post-flight assessment of DON facilities. Each element of the program is reviewed and improved based on lessons learned from mock and Joint Trial overflights. The notification database is frequently updated and the Navy's notification process is continually reviewed and improved to provide the maximum amount of advance notice to DON forces, organizations, and facilities of an impending foreign overflight. The post-flight assessment includes analyzing imagery of DON facilities.

5.5.3.4 AIR FORCE

The Air Force is responsible for providing the U.S. Open Skies airfields, aircraft, and sensors, including the preparation of the personnel to support, operate, maintain, and fly the aircraft. Operational planning requirements are provided in the planning assumptions. A robust schedule of training flights will be scheduled in cooperation with DTRA and the Operations and Training Coordination Sub Group of the Open Skies Implementation Working Group to ensure DoD compliance with all treaty provisions. The Air Force will provide a capability to initially process the image media from the overflights, including the initial copy provided to the foreign state. The Air Force will ensure that its organizations and facilities are prepared to receive foreign overflights as notified. Assessments will be made after foreign overflights of the impact of imaging by the flight.

A requirement exists to travel in support of the Air Force responsibilities with respect to this treaty. Civilian pay and overtime, to support the Air Force's requirements under their elimination activities/weapons systems modification and their mission operations/facility support, is also a requirement to perform necessary support activities/ modifications. The requirement for aircraft flying hours includes trial flights, and other mission support flights, such as training, calibration, data collection and operator proficiency. The Air Force has a requirement to ensure sensors and equipment are maintained in proper working condition, and can perform the functions allocated to them as had originally been projected. In addition, facility maintenance is also a requirement.

5.5.3.5 NATIONAL IMAGERY AND MAPPING AGENCY (NIMA)

NIMA is responsible for the planning of U.S. overflights of foreign states.

5.6 PROCUREMENT PROGRAM

Life-cycle upgrade efforts for the year 2000 include the replacement of nine OSMAPS SUN workstations and associated peripheral equipment. In addition, the integration of Solaris version 7 software will improve the performance of OSMAPS's operating systems. Four new laptops were also purchased to replace the less capable TOPS.

This procurement effort represents the first hardware upgrades to the OSMAPS workstations since their initial fielding in 1993.

5.7 RDT&E PROGRAM DESCRIPTION

The conventional arms control RDT&E program supports a wide range of arms control treaties, regimes and agreements in various stages of negotiation, ratification and implementation. These include CFE, in force since 1992, VD99, the CCW, the Anti-Personnel Landmine negotiations in the CD, the Treaty on Open Skies and CSBMs for the OAS. The support provided includes technical support to negotiating and implementation and compliance fora,

technical assessments, and technology development, including proof of concept and development of prototypes.

Conventional Arms Control RDT&E projects that are being pursued in the FY00-FY01 Program are described below.

5.7.1 TECHNICAL ASSESSMENTS CATEGORY

5.7.1.1 SUPPORT FOR DOD IN THE IMPLEMENTATION AND COMPLIANCE MISSION FOR CONVENTIONAL ARMS CONTROL

The requirement is to provide compliance and implementation technical evaluations and assessments to OUSD(AT&L)/ACI&C.

The project addressed to this requirement provides continuing support in the following areas: 1) assessments of proposed conventional arms control actions; 2) analyses of reports; 3) assessments of plans; 4) evaluations of program execution; 5) briefings and reports; 6) issue papers; 7) development of minutes or summary reports of briefings; 8) assessment of the effectiveness of U.S. implementation of, and compliance with, conventional arms control activities; and 9) support for conferences and workshops.

Tasks are on an as needed basis with specific timelines defined for the individual tasks. The need is for an indefinite period.

5.7.1.2 TREATY TECH SUPPORT (APL/CCW AND SA/LW)

This project supports the mission need to perform assessments that give technical support to USG negotiators and backstopping groups for ongoing negotiations and post-negotiation consultative commissions or review conferences dealing with the CCW, SA/LW, APL ban, and APL export controls through the United Nations CD, among other fora.

This project consists of the following specific tasks: 1) provide technical support to the U.S. negotiating team in terms of detection of mines and minefields and other monitoring methods applicable to production, transfer, stockpile, and use of APL; 2) provide negotiation support for CCW/APL transfer ban through the preparation of position papers and briefings to the negotiating team, and responding to quick-turn-around taskings and requirements to travel to the negotiation sites for consultations with the team; and 3) provide an initial assessment of the impact on DoD of arms control agreements to limit small arms and light weapons, 4) attend government-sponsored meetings for inter-agency coordination and update of negotiating positions as necessary.

This project is expected to end in FY00 with remaining responsibilities assumed under the project above. The users of this effort are OUSD(AT&L), OUSD(P), OASD(SO/LIC), the Joint Staff, and U.S. Negotiating Teams.

5.7.1.3 OPEN SKIES PERFORMANCE EVALUATIONS

This project supports multiple mission needs: 1) to monitor the data from the complete suite of Open Skies (OS) sensors throughout the full operational capability (FOC) period; 2) to provide negotiation support for Conventional Arms Control and Open Skies Fora; 3) to formulate OS sensor systems performance definition and candidate replacement sensor testing; 4) to provide development and acquisition support for Open Skies - updated IRLS and video/EO; and 5) to provide development and acquisition support for updating/replacement of OS sensor systems (optical camera, SAR, etc.).

This is a project with a broad spectrum of activities which satisfies multiple requirements. As part of this project, the following tasks will be performed: 1) project management and reporting; 2) negotiation support; 3) Open Skies sensor systems performance definition and candidate replacement sensor testing; 4) development and acquisition support for Open Skies updated IRLS and video/EO; 5) Open Skies sensor performance evaluation; 6) operations and training support; 7) technical investigations; and 8) support technical interchange meetings.

The users of this effort are OUSD(AT&L), DTRA/OSO, the Air Force, and NIMA.

5.7.1.4 OPEN SKIES MANAGEMENT AND PLANNING SYSTEM (OSMAPS) LIFE CYCLE ANALYSIS AND MISSION PLANNING EXTENSION

This mission need is to assess and select for proof-of-concept Open Skies Mission Planning alternatives that improve operational efficiency and/or accommodate requirements of new regimes that are similar to or adapted from the current Treaty on Open Skies. Possible regimes outside the current Treaty area of interest (AOI) may include observation regime for the Middle East, South Asia, or Latin America.

This mission need assumes a functioning OSMAPS that has the capability of: 1) designing crew mission folders for sensor operators and flight monitors; 2) optimizing flight plans to meet coverage requirements; and 3) predicting image collection. In addition, this mission need also assumes a functioning prototype TOPS that can alter mission plans with changes required by on-site negotiations, weather, or other events.

Analysis must identify alternatives, trade-offs, and risks. The assessment should identify the most promising improvements, assess their technical feasibility, and define technology development plans where there are technology shortfalls. A demonstration plan for

proof-of-concept for preferred methods will be defined and costs will be estimated. The assessment will describe necessary changes and the impact of those changes on current Open Skies mission planning.

The primary customers for this effort are NIMA, DTRA, and USAF for OSMAPS and TOPS. OUSD(AT&L)/ACI&C is a customer of the applicability of this technology to three regions: Latin America, Middle East, and Asia/Pacific Rim.

5.7.1.5 AERIAL MONITORING APPLICATIONS IN TREATY VERIFICATION

This project supports a mission need for aerial/aerospace monitoring (AAM) to provide a technical feasibility assessment that examines the potential benefits arms control regimes may realize from aerial observation strategies for verification monitoring and to capture the results in a continuum of AAM capabilities and their utility in current and future regimes. This assessment will identify technologies that ensure the USG can satisfy emerging verification monitoring and data management requirements arising from the increased role of AAM regimes. This assessment will focus on non-intelligence oriented, aerial *airborne manned/unmanned, fixed-/rotary wing, balloon* and space *commercial space-based platforms* monitoring technologies (imaging and non-imaging) to develop specifically designed systems supporting verification and monitoring regimes used for arms control, conflict prevention, crisis management, regional stability, and confidence building.

The project consists of the following tasks: 1) provide information for future mission areas; 2) identify current and future exportable technologies; 3) identify current and potential treaties, agreements or conventions that permit or reference the inclusion of non-intelligence related aerial monitoring programs; 4) provide an exhaustive list of aerial monitoring capabilities employed against potential applications; and 5) provide a comprehensive list of possible ancillary support missions.

The users of this effort are OUSD(AT&L), OUSD(P), OASD(SO/LIC), the Joint Staff, arms control working groups, and arms control planners within DoD.

5.7.1.6 REGIONAL VERIFICATION TECHNOLOGY ASSESSMENT

The mission need is to perform technical assessments that prepare DoD to understand and evaluate emerging arms control technology objectives and investment opportunities in troubled regions and the RDT&E support needed to achieve those objectives. Assessments for the regions of Asia/Pacific Rim and Latin America were completed in earlier 2000 and a new effort for Northeast Asia should begin by mid-2000. The assessments are needed to provide direction and oversight for the conduct of the arms control RDT&E program as specified in DoDD 2060.1 and to provide OUSD(AT&L) with knowledge and plans to meet its

responsibilities in providing technical experts to support OSD representatives to arms control fora, in enabling prompt execution of Secretary of Defense decisions on arms control issues.

The products are assessments structured to assist OSD in projecting relevant technology development needs and plans. Development of a conceptual model for regional instability in Northeast Asia through expert workshops and influence net modeling is an additional product. The projections will be derived from the assessment of factors such as regional threats, orders of battle, extra-regional implications of any instabilities, and the basis for such instabilities in light of political, economic, military, and cultural factors. The assessments will identify likely arms control objectives that could mitigate the regional tensions and promote stability in the three regions of interest. Each assessment will identify and select candidate verification regimes that can meet those objectives and define verification requirements associated with those selected regimes. The assessments will use these objectives, regimes, and verification requirements to evaluate systems and technologies needed to support implementation of the candidate arms control measures, and to identify monitoring needs.

The users of this support are OUSD(P) and OUSD(AT&L). Potential users of the concepts for verification and compliance identified in the assessments are future negotiating delegations, the Joint Staff, the Services and DTRA/OS.

5.7.1.7 TECHNICAL SUPPORT TO OPEN SKIES TREATY

The requirement is to perform assessments that give technical support to the USG negotiators and backstopping groups for ongoing negotiations and post-negotiation consultative commissions or review conferences.

The need for this type of support is inherent in the negotiations and implementation process and takes the form of: 1) technical/technological analyses and briefings to analyze the validity and accuracy of proposed decisions and measures; 2) technical implementation assessments to outline approaches to implementing a proposed decision; 3) impact assessments on implementing decisions/issues; 4) investment assessments to determine the impact a proposed decision might have on DoD technology investment; and 5) technical support to the working groups on sensors, and flight rules and procedures.

The project is currently supporting acquisition and testing of digital IR and video sensors for U.S. aircraft and providing analytical support for future certification and operation of these sensors.

5.7.1.8 ARMS CONTROL TECHNOLOGY REFERENCE AND DISPLAY CENTER

The mission need is to provide a means to catalog the results of arms control assessments and studies for future reference and to display products of arms control technology

efforts. The ultimate goal is to have a reference and display center with orientation capabilities in the Washington D.C. area. It is envisioned that the Arms Control Technology Reference and Display Center will act as a resource for technology reference and prototypes for treaty verification and will provide orientation on the use of inspection tools and verification techniques. This is a joint chemical, strategic, and conventional effort.

5.7.2 TECHNOLOGY DEVELOPMENT CATEGORY

5.7.2.1 SAFE DETECTION OF APL MINEFIELDS

This project supports the mission need for proof-of-concept of a tool to remotely detect and map APL minefields to verify/monitor compliance with future agreements implementing the U.S. goals, and to ensure inspector/observer safety acting in accord with said agreements. Currently USG policy objectives are being pursued through several venues. The U.S. has signed the CCW, and its amended Protocol II that was ratified on May 20, 1999. The U.S. has initiated negotiations on prohibiting the export of APL in the Conference on Disarmament (CD). The President has stated that the U.S. will sign the Ottawa Convention by 2006, provided that suitable alternatives to APL and mixed systems are identified and fielded by then. Finally, the President has announced a “demining 2010 initiative.” In order to implement USG objectives, a capability is required to safely detect APL minefields. This work could lead to a decision to develop a prototype system. This project consists of the following specific tasks: 1) analysis & sensor demonstration; 2) integrated system feasibility; 3) proof of concept; and 4) potential prototype development.

The users of this effort are OUSD(AT&L), OASD(SO/LIC), the Joint Staff, and U.S. negotiating teams

5.7.2.2 OPEN SKIES MISSION EXECUTION - SYSTEM FOR AUTOMATED MISSION PLANNING AND EXECUTION MANAGEMENT

The requirement is to continue the development of OSMAPS, an automated tool that performs Open Skies mission planning, modeling, and analysis supporting the United States' effort to capably and efficiently exercise its rights and obligations under the Open Skies Treaty. The needs are to: 1) develop an integrated flight and sensor operation plan for U.S. observation flights; 2) analyze foreign flight plan requests over the U.S.; 3) generate notifications to selected DoD industries and defense establishments of impending overflights; 4) design crew mission folders for sensor operators and flight monitors; 5) optimize flight plans to meet coverage requirements; 6) assist in overflight vulnerability assessments; and 7) predict image collection.

The development of OSMAPS addresses the above requirement. In addition to the OSMAPS code and workstations, two peripheral systems have also been developed to meet USG requirements for the Open Skies Treaty. First, the DARMS is installed on the U.S. OC-

135B aircraft and meets the treaty requirements to annotate sensor media, record sensor events, and display mission status to observers. Second, the TOPS is a portable version of the OPS and is used to alter the mission plan with changes required by on-site negotiations, weather, or other events.

Completion of this prototype and its independent validation and verification and turn over to the user is scheduled in the 2nd Quarter FY00.

5.7.2.3 EXTENDED DIGITAL PROCESSOR

This project supports the mission need to provide a deployable, prototype, treaty-compliant capability to process mission data and images from a passive demonstration mission of a fully capable foreign Open Skies aircraft sensor suite (optical, infrared, and synthetic aperture radar). This capability ensures that the U.S. can exercise its treaty right to verify that data collected during foreign overflights complies with provisions of the treaty. Completion of this project is projected for FY02 because of the delay in Open Skies EIF and subsequent certifications of sensors.

The demonstration flight processing capability to be developed will include imagery from the infrared line-scanner, the video camera, and the synthetic aperture radar. The output of the processor will support expert post-flight analysis that can calculate minimum height, or in the case of synthetic aperture radar, the measured resolution, for verifying the performance of foreign sensor(s). The processor will verify sensor performance within 24 hours of completion of the flight. This project consists of the following tasks: 1) obtain design parameters from foreign aircraft and sensor suites used in the Open Skies observation flights; 2) develop a processor to create or display imagery from the digital sensor data available from foreign aircraft during passive demonstration flights over the United States; 3) test and install the data processor at two fixed Open Skies sites and provide two portable versions of the processor; and 4) provide documentation, training, and technical support for successful fielding of the processor for one year.

The users of this effort are OUSD(AT&L) and the U.S. Air Force.

5.7.2.4 REGIONAL INSPECTION SIMULATION TOOL (RIST)

The requirement is to develop and test a near real-time, interactive, simultaneous multiple site simulation system that can provide a training, demonstration, and orientation tool to acquaint users with the details and benefits surrounding on-site inspection.

OUSD(P) has noted a deficiency in the training capabilities available to support the USG in developing a broader understanding of arms control treaties and agreements and the equipment and procedures used in collecting the data to support verification throughout the

world. A method to provide effective simultaneous interaction between parties is needed to provide orientation and training related to arms control, CSBMs, and verification technology that may be useful to address specific regional security concerns. RIST will be used to introduce the idea of managed access, increase familiarity with arms control technologies and techniques, and instruct users on how to utilize transparency measures to increase regional confidence while protecting their military equities. It will also be used for inspector training, mission rehearsal, and facility management and preparation.

This project will develop a simulation system to provide a broader understanding of an actual on-site inspection based on specific treaty parameters. Computer-based training modules will be included to instruct participants on the specific procedures associated with on-site inspection. The development of the RIST will leverage to the extent possible the arms control training aids possessed by the Services, the Joint Staff, and DTRA/OS. DTRA/OS will generate scenario content and scripting based both on previously developed materials and additional needs of OUSD(P) and the Joint Staff. While the system should retain the flexibility to be structured for any region of the world, the initial training modules will be developed with a focus on the Middle East. Additional modules to cover specific regimes or treaties or to adapt the tool to different regions will be provided when requested by users and validated by ACI&C.

The users of the training tool are OUSD(P) and DTRA/OS.

5.7.3 EMERGING TECHNOLOGY

The requirement is to leverage DoD resources by capitalizing on the core expertise and skills of the national laboratories and other research institutions to achieve cost effective solutions to future arms control verification requirements. Work under this effort spans all treaty areas. To accomplish this, DTRA may invest five percent of their total arms control technology budget, each year, to investigate promising technology.

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SECTION 6

DoD PROGRAM SUPPORTING STRATEGIC ARMS CONTROL

6.1 OVERVIEW

This section describes the FY 2000-2001 Program for START, START II, and other strategic treaties and agreements. It also provides information on DoD efforts to develop verification-related technology and procedures to meet current and future requirements.

6.2 ARMS LIMITATIONS IN CONNECTION WITH STRATEGIC FORCES

The following Treaties and Agreements are currently being supported by OUSD(AT&L) and are addressed in this program plan. Details of these are provided in Appendix B.

- The Strategic Arms Reduction Treaty (START)
- START II (including the protocol signed in September 1997)
- Anti-Ballistic Missile Treaty(including ABM Treaty-related Agreements signed in September 1997)
- Intermediate-Range Nuclear Forces (INF) Treaty
- Missile Technology Control Regime (MTCR)
- Plutonium Production Reactor Agreement

Activities within these treaty and agreement areas that will or could impact the strategic arms control program include:

- For the START Treaty: START entered into force in December 1994. The United States has fully exercised its inspection and monitoring rights and complied with its obligation to receive inspections. As areas for improvement in implementation are identified, a program to address these needs will be developed. Some areas that have already been identified are:
 - Ensuring the ability of DoD facilities to prepare for and protect sensitive information during any Visits with Special Right of Access (SAVs).
 - Identifying and assessing potential technical approaches to reduce implementation costs and/or impacts.
- For the START II Treaty: In accordance with the START II Treaty, ratified by the United States in January 1996, the United States must be ready to accept new exhibitions and some new inspections procedures in addition to those currently found

in START. New types of inspections will also be performed by the United States in Russia. Modifications to the START Central Data System (SCDS) software must be made in order to support additional notification obligations. The DoD must also be ready to provide technical assistance and support to the Bilateral Implementation Commission (BIC). While requiring advice and consent of the Senate, a Protocol signed in September 1997 (based on an agreement between the U.S. and Russian Presidents reached at the March 1997 Helsinki Summit) would extend the START II timeline for the period of reductions to December 31, 2007. As agreed to in Ministerial letters that accompany the 1997 START II Protocol, all strategic nuclear delivery vehicles that will be eliminated under START II must be deactivated by December 31, 2003, by removing nuclear reentry vehicles or by other jointly agreed steps.

- For the ABM Treaty: It is the Administration's policy that the ABM Treaty remains a cornerstone of strategic stability. Presidents Clinton and Yeltsin agreed at Cologne in 1999 that the ABM Treaty is of fundamental importance for further reductions in strategic offensive arms. The Administration has stated that the deployment of limited NMD that required amendments to the Treaty would not be incompatible with the underlying purpose of the ABM Treaty, i.e., to maintain strategic stability and enable further reductions in strategic nuclear arms. U.S.-Russian talks on ABM Treaty modifications began in August 1999. The Program Plan covers R&D efforts that may be used to provide technical assistance and support to the U.S. component of the SCC, and to support implementation of the 1997 Demarcation Agreements. This will include necessary modifications to the Compliance Monitoring and Tracking System (CMTS) to support notification obligations agreed to in the TMD Confidence Building Measures Agreement. This represents a major change to ABM Treaty implementation and compliance provisions.
- For the MTCR regime: Current notification procedures for START may be adapted to allow for prior notification of space launch vehicle (SLV) launches by MTCR participants and end-users of MTCR-controlled equipment. These notifications may be used to monitor SLV launches to confirm that missile trajectories are not representative of ballistic missiles. MTCR verification measures may be strengthened. If this occurs, there may be a need to track ballistic missiles on a global scale. For example, parties could agree that all missiles within certain performance parameters will be modified so they can be remotely tracked by a central facility/organization.
- For PPRA: On September 23, 1997, Vice President Gore and Prime Minister Chernomyrdin signed an agreement on Cooperation Regarding Plutonium Production Reactors. This will require monitoring of reactors and special nuclear material.

Technology may be needed to ensure competent storage of weapons grade materials, that lower grade materials have not been substituted for weapons grade material, and that spent fuel is properly monitored. Such technology may be similar to that being investigated for potential use in START III or the Mayak Transparency agreements.

Signing the Plutonium Production Reactor Agreement created the need to establish a baseline for a monitoring regime. In February 1998, a Russian monitoring team completed the Russian Joint Experts Visit (JEV) to Savannah River, S.C. and to Hanford, Washington establishing locations for seals of shutdown reactors. In March 1998, a U.S. Joint Expert Visit was conducted in Ozersk, Seversk, and Zheleznogorsk completing the U.S. baseline of Russian reactors. A Plutonium Oxide Demonstration was conducted at Savannah River, S.C. in July 1998 for U.S. and Russian technical experts to discuss acceptable procedures that U.S. and Russian monitors will use to periodically check tags and seals on containers in storage and measure randomly selected containers to ensure that the material inside is weapon-grade and newly produced. In March 1999, the U.S. monitors establishing a baseline for all future reactor missions by completing the first reactor-monitoring mission in Russia. The first Russian monitoring mission of shut-down U.S. reactors took place in June 1999.

- For future strategic arms control (SAC):
 - At the May 10, 1995, Moscow Summit, Presidents Clinton and Yeltsin agreed to a framework on nuclear warheads and fissile material in a Joint Statement on the Transparency and Irreversibility of the Process of Reducing Nuclear Weapons. The major provisions of this Joint Statement would:
 - Ban the use of fissile material removed from nuclear weapons and deemed excess to national security requirements, from further use in nuclear weapons;
 - Ban the use of civil fissile material to manufacture nuclear weapons;
 - Ban the use of new fissile material in nuclear weapons; and
 - Negotiate transparency measures including information exchanges on warhead and fissile material stockpiles.

Little has occurred due to Russian unwillingness to provide information on its nuclear weapons stockpile. However, some broad concepts from the Moscow Joint Statement have been reprised in the Helsinki Summit START III Joint Statement—but only for strategic nuclear warheads.

- At the March 1997 Helsinki Summit, Presidents Clinton and Yeltsin agreed to parameters for negotiations on further reductions in strategic offensive arms. At the June 1999 Cologne summit, the Presidents agreed to hold discussions on a START III Treaty and modifications to the ABM Treaty. As agreed at Helsinki,

START III would reduce deployed, strategic, nuclear warheads for each of the parties to 2,000 - 2,500 by December 31, 2007, and would include measures relating to the destruction of nuclear warheads, transparency of nuclear warhead inventories, and other jointly agreed technical and organizational measures to promote the irreversibility of reductions in the number of nuclear warheads. It was also agreed to consider, in the context of START III, but as separate issues, possible measures relating to long-range nuclear SLCMs and tactical nuclear systems. This initiative breaks new ground by requiring the inclusion of nuclear warhead dismantlement and transparency measures for the first time in a strategic offensive arms reduction agreement. This will require the negotiation of new kinds of transparency and verification provisions not included in either START or START II.

- Implementation of future arms control agreements might require the means to determine the presence and quantities of SNM-related treaty limited items (TLI) in particular phases of their life cycles. Special storage facilities and/or transportation means might be used for non-deployed warheads and SNM stockpiles. This might necessitate monitoring, perhaps observing, warheads in all phases of their life cycle, to include conversion and/or elimination, and could require the development of procedures and/or special equipment to accomplish the desired monitoring.

6.2 STRATEGIC ARMS CONTROL PROGRAM GUIDANCE

- Identify and assess potential technical approaches to reduce current treaty implementation cost and/or impacts and to lessen reliance upon on-site inspections.
- All identified requirements must be validated, and new R&D projects must address a specific validated need or requirement. The continued need and focus of each project must be periodically reviewed and approved by the appropriate OSD Treaty Manager.
- Provide technical and negotiation assessment support to the JCIC, the BIC, the Special Verification Commission (SVC), the SCC, and the START III negotiating group;
- Evaluate technologies with the potential to support a START III Treaty that addresses warheads and SNM in various phases of their life cycles.
- Review technologies to support the implementation of the First and Second Agreed Statements and the CBMA and possible amendments to the ABM Treaty.

- Perform technical assessments as required by OSD to support successful DOD implementation of and compliance with all Treaty obligations.
- Review and evaluate inspection methods and procedures to identify potential reduction in costs and/or impacts and reduce dependence on on-site inspections.
- Perform technical assessments and proof of concept efforts supporting PPRA fuel and nuclear material monitoring.

6.4 STRATEGIC ARMS CONTROL PLANNING ASSUMPTIONS

The DoD approved planning assumptions are found in Appendix C.

6.5 OPERATIONS AND MAINTENANCE PROGRAM

6.5.1 INTRODUCTION

O&M funding provides the capability to implement treaty provisions on a routine and sustained basis throughout the program period. Until sufficient operational experience is gained as a basis for funding projections, funding estimates will be dependent on planning assumptions. Funding must ensure a capability for the DoD to fully comply with the agreed measures.

6.5.2 O&M SUPPORTING STRATEGIC ARMS CONTROL TREATIES AND AGREEMENTS

6.5.2.1 DTRA

INF/START. The DTRA is responsible for the planning and conduct of all U.S. inspection, escort, and monitoring missions under INF and START. The DTRA maintains points of entry into the United States for foreign INF and START inspectors at Dulles Airport, Washington, DC, and at Travis AFB, CA. The DTRA also operates staging areas for U.S. teams entering the former Soviet Union area for inspections under INF, START, and CFE in Frankfurt, Germany, and Yokota, Japan. The DTRA acts as the official USG representative on missions to escort foreign inspectors at U.S. facilities both in the United States and in Europe. The DTRA maintains a portal perimeter continuous monitoring (PPCM) site at the Votkinsk Machine Building Plant for continuous monitoring under both INF and START, and has a detachment in Magna, Utah, to oversee the Russian PPCM there under INF. The DTRA expenses under INF and START are for: inspection, escort, and monitoring missions; linguist support; military and civilian air and ground transportation; telecommunications; facilities; training; and logistical support.

START II. The DTRA mission includes planning to accomplish inspection and escort activities. The START II mission will require support in the areas of: inspection and escort missions, telecommunications, military and civilian air and ground transportation, facilities, logistical and management support, and linguist support. Inspections will be conducted in Russia and support must be provided for Russian inspections in the United States. The Russian inspection teams will receive logistical support such as transportation, access to communications, billeting and meals, and emergency medical and dental care.

PPRA. On September 23, 1997, Vice President Gore and Prime Minister Chernomyrdin signed an agreement on Cooperation Regarding Plutonium Production Reactors. Under this agreement, Russia and the U.S. will not restart any of their plutonium production reactors that have already been shutdown (in the U.S. all reactors are currently shutdown and in Russia 10 of their 13 have already been shutdown.) By the year 2004, Russia will convert [with

U.S. assistance] its remaining 3 reactors. Pending these modifications, plutonium produced in these reactors may not be used in nuclear weapons. Additionally, plutonium storage facilities at both Zheleznogorsk and Seversk will be monitored to ensure that this special nuclear material (SNM) is not recycled into new weapons. A November 8, 1994 joint DoD and Department of Energy Memorandum of Agreement assigned support of the Plutonium Agreement mission to DTRA. U.S. teams will escort Russian monitors at the 14 shutdown plutonium production reactors in the U.S. and Russian monitors will escort U.S. monitoring teams at the ten shutdown plutonium production reactors and two storage facilities in Russia. These missions will require support in the following areas:

- monitoring and escort activities;
- linguistic support;
- communications;
- training;
- ground and air transportation;
- facilities; and
- logistical and management support.

6.5.2.2 ARMY

The Army will continue to take all necessary actions, at all affected Army installations, facilities, and activities to ensure full compliance with the applicable strategic arms control treaties: INF, START, START II, and the ABM Treaty and associated missile defense programs.

HQDA is responsible for INF planning and management oversight activities for the Army, including oversight of the data management system and the notification and reporting system. The U.S. Army Aviation and Missile Command (AMCOM), a Major Subordinate Command of the Army Materiel Command (AMC), is the Army's Implementing Agent for INF. AMCOM has been tasked with ensuring Army readiness for INF implementation activities, including on-site inspection activities and compliance notification reporting relevant to INF R&D boosters and launchers. The Army is responsible for planning for and hosting inspections at all former Army INF facilities in CONUS and OCONUS.

HQDA is responsible for START planning and management oversight activities for the Army, including oversight of the data management system and the notification and reporting system. The U.S. Army Space and Missile Defense Command (SMDC) is the Army's Implementing Agent for START. SMDC has been tasked with ensuring Army readiness for START implementation activities, including routine on-site inspections, requests for Special Right of Access Visits (SAVs), and compliance notification reporting relevant to the Army's former type Polaris A-3 SLBMs. The Army owns and stores Polaris A-3 SLBMs for use in its Strategic Target System (STARS).

The Army has three facilities that are subject to on-site inspection under the provisions of START: Combat Equipment Group-Asia (CEG-A), which is collocated with the Navy's Strategic Weapons Facility Atlantic Detachment (SWFLANT-Det) at Goose Creek, SC, and two facilities at Camp Navajo, AZ, where the Arizona Army National Guard stores Minuteman II and III ICBMs for the Air Force, and Trident I SLBMs for the Navy.

All Army facilities on U.S. national territory (including government-owned, contractor-operated facilities) are subject to a START SAV. Should an SAV occur at an Army facility or an Army government-owned, contractor-operated (GOCO) facility, the Army is responsible for all costs associated with the SAV, except for those costs to be covered by DTRA. Costs include contractor overtime, costs associated with site preparation, pre-inspection vehicle/cargo/container holding requirements, and/or the suspension or curtailment of sensitive activities.

As a result, the requirement exists for Army personnel to travel in conjunction with INF and START inspections and implementation activities at those facilities to provide site assistance visits, response evaluation visits, training and assessment visits, and to support readiness training exercises and actual treaty inspections and visits. Given the intrusive nature of on-site arms control inspections, the Army must ensure development of facility operational security plans to safeguard sensitive activities and programs. Additionally, civilian manpower is necessary to manage the Army's equities in support of INF, START and ABM Treaty-mandated activities. Civilian personnel manage implementation and compliance with these treaties, including data collection, management, treaty inspection and preparation coordination, and major command resource management.

To prepare for known inspections and potential SAVs, Army personnel, DA civilians, and contractors must gain and maintain familiarity with INF and START treaty verification regime provisions. Included in the treaty training are: 1) training of Army personnel by attending DTRA INF and START training classes (funded by DTRA); 2) observation by Army personnel of INF and START inspections and training exercises conducted at Army, Navy, and Air Force sites (funded by the Army); and 3) sustainment training and training of new personnel for INF and START inspections incorporated into the regular inspection schedule (funded by the Army).

During INF and START verification activities, the Army is responsible for moving (if possible), or procuring shrouds, crates, and other concealment devices to prevent observation of sensitive items and activities unrelated to the treaty inspection protocol.

SMDC has been designated as the U.S. Army Implementing Agent (IA) for the ABM Treaty and the 1997 Treaty-related Agreements when they enter into force. As Treaty IA, SMDC is responsible for ensuring Army-wide ABM Treaty implementation and compliance.

6.5.2.3 NAVY

The Navy is responsible for reductions and limitations pertaining to SLBMs and their attributed warheads. This will include warhead downloading to meet START II limits, which involve deployed SLBMs/launchers on SSBNs and the compliant elimination of SLBM launchers by the drawdown of SSBNs. In addition, the Navy is responsible for planning for and hosting inspections by inspectors from the former Soviet Union (FSU) at specified Navy facilities. Preparation includes educating and training facility personnel, publishing compliance plans, preparing site diagrams, and conducting mock inspections to ensure compliance with the INF and START Treaties. The DON coordinates resolution of ABM Treaty compliance questions associated with Navy TMD programs and responds to congressional inquiries and special requirements.

The Navy continues to fully support INF inspections at the Lockheed Martin facility in Middle River, MD; at SPAWARSYSCEN, San Diego, CA; the former missile operating base at Comiso, Italy and portal monitoring at the Alliant Techsystems, Inc., facility at Magna, UT. Personnel, training, travel and per diem costs are associated with maintaining readiness to support INF inspections. INF inspections require special preparations of the Lockheed Martin facilities and routine site readiness maintenance.

The Navy continues to fully support START inspections at nine declared facilities. Up to two data update inspections may be conducted per year at SWFLANT, Kings Bay, GA; SWFPAC, Silverdale, WA; Camp Navajo Depot, Bellemont, AZ; Naval Air Warfare Center (NAWC), China Lake, CA; Trident Training Facility (TTF), Kings Bay, GA; TTF, Bangor, WA; and Tekoi Test Facility, Goshute Indian Reservation, UT. Up to two Formerly Declared Facility Inspections may be conducted per year at SWFLANT Detachment, Charleston, SC. Up to two Reentry Vehicle On-Site Inspections (RVOSI) may be conducted per year at SWFLANT, Kings Bay, GA, and SWFPAC, Silverdale, WA. Up to two Suspect Site Inspections (SSI) may be conducted per year at Alliant Techsystems, Inc., Bacchus Works, Magna, UT. Up to two cooperative displays for the one special purpose submarine in Pearl Harbor, HI, may be conducted each year. The other special purpose submarine completed elimination and was removed from accountability in CY00.

The Navy conducted preliminary planning for START implementation activities required during establishment of a new facility subject to START notification and verification requirements. The notification for the declaration of a Conversion or Elimination Facility for SLBMs and ICBMs at Oasis Complex, Utah and the associated site diagram were forwarded to the Joint Staff and Nuclear Risk Reduction Center (NRRC) in May 1999.

The Navy successfully hosted a Close-Out Inspection of the SLBM Storage Facility at Strategic Weapons Facility Atlantic Detachment (SWFLANT Det), Charleston, SC. The Navy

has made arrangements for continued compliance with the requirements for readiness for a Formerly Declared Facility Inspection at SWFLANT Det.

All Navy facilities on U.S. national territory (including government-owned, contractor-operated facilities) are subject to START SAV. Should a SAV occur at a Navy facility or a Navy government-owned, contractor-operated facility, the Navy is responsible for all costs associated with the SAV. Costs include contractor overtime, costs associated with site preparation, pre-inspection vehicle/cargo/container holding requirements and/or the suspension or curtailment of sensitive activities.

6.5.2.4 AIR FORCE

The Air Force is responsible for ICBM silo and heavy bomber elimination as well as ICBM warhead downloading and heavy bomber warhead attribution efforts required to meet START and START II launcher and warhead limits. The Air Force also continues to prepare for and support START and INF inspections at Air Force facilities. Preparation includes educating and training facility personnel, publishing compliance plans, preparing site diagrams, and conducting mock inspections to ensure Treaty compliance. INF inspections will be conducted through 2001. The Air Force is also responsible for Elimination Activities and Weapons Systems Modifications in which the support activities ostensibly span the entire range of categories listed below.

Travel and per diem requirements include TDYs to support the JCIC and BIC, START Central Node at HQ ACC, travel associated with site installation and training, AF personnel travel to the STARS training course, and any other treaty compliance activity as required. Local transportation for inspectors being housed at AF facilities is also a requirement.

Program management support for MAJCOMs and analysis support to HQ USAF/XONP on issues and policy implications surrounding implementation of START is required. XONP coordinates resolution of all Treaty compliance questions associated with Air Force programs/facilities and responds to congressional inquiries and special requirements.

Additionally, civilian and contractor time is required to assist during inspections. Therefore, civilian salaries and, during inspections, civilian overtime and contractor overtime attributed to work stoppages are required to be reimbursed.

Performance of mock inspections is required in order to maintain treaty readiness.

Equipment necessary for treaty purposes must be maintained in an operational status.

The United States plans to meet the START treaty provisions by destruction/elimination of MM II Silos, some MM III silos, B-52A-G aircraft, and a portion of the MM III

Reentry System Bulkheads. These activities are contractor supported, and contractor maintained.

6.6 PROCUREMENT PROGRAM

6.6.1 NAVY

START II

1. Procure additional RV ballasts, containers, and covers to support the projected download of U.S.-deployed SLBMs to meet START II intermediate warhead limits.
2. Continue study of potential design parameters and procurement requirements of revised RV on-site inspection hard covers for use on SLBMs with reduced attribution of warheads.

6.7 RDT&E PROGRAM DESCRIPTION

The strategic program focuses on meeting requirements related to implementing and complying with START, START II, a potential START III, potential amendments to the ABM Treaty, ABM/TMD demarcation, and the MTCR. The program includes projects to improve current implementation and compliance capabilities and to anticipate potential future requirements. Systems, equipment, and procedures have been developed and made operational to exchange data, accommodate inspections of U.S. facilities, and enable the United States to exercise all its treaty rights. A capability to evaluate developed systems, equipment, and procedures must also be maintained, as well as a capability to assess their suitability for application to future arms control regimes. In addition, support to the treaty commissions must continue to resolve technical issues, assist in developing the appropriate implementing documents, and evaluate the compliance of U.S. development and testing programs with the various strategic arms control treaties.

Strategic Arms Control RDT&E Projects that are being pursued in the FY00-FY01 Program are described below.

6.7.1 TECHNICAL ASSESSMENTS

6.7.1.1 STRATEGIC IMPLEMENTATION AND COMPLIANCE SUPPORT

The requirement is to provide compliance and implementation technical evaluations and assessments to OUSD(AT&L)/ACI&C.

The project provides continuing support in the following areas: 1) assessments of proposed SAC actions; 2) analyses of reports; 3) assessments of plans; 4) evaluations of

program execution; 5) briefings and reports; 6) issue papers; 7) development of minutes or summary reports of briefings; 8) assessment of the effectiveness of U.S. implementation of, and compliance with, SAC requirements; and 9) support for conferences and workshops.

Tasks are on an as needed basis with specific timelines defined for the individual tasks. The need is for an indefinite period. Customers include OSD, the Joint Staff, and the Services.

6.7.1.2 JCIC/BIC SUPPORT

The requirement is to provide support, when requested, to U.S. negotiators at sessions of the START JCIC or the START II BIC, to resolve compliance issues or develop Treaty implementation provisions and procedures. The JCIC and BIC are tasked to resolve compliance issues, agree on measures to improve Treaty viability and effectiveness, and develop Treaty-implementing provisions and procedures for START and START II, respectively. Since the issues confronted when fulfilling those tasks have different technical aspects, each commission may require varied technical support. This support will ensure that U.S. negotiators have the technical information to resolve implementation and compliance questions.

Technical support provided by this project will, as required, resolve compliance issues or develop treaty implementation provisions and procedures. Technical support is anticipated to include assessments, reports, briefings, and on-site expertise. The BIC has not been in session due to delays in treaty EIF.

Technical support in developing negotiation positions will be provided to OUSD(P) for START III monitoring and inspection protocols.

6.7.1.3 NATIONAL SECURITY-RELATED RESEARCH

The mission need is to support Arms Control RDT&E requirement to conduct in depth research related to the DTRA's Arms Control mission to determine possible strategies for future technology developments.

This project provides support to coordinate and focus outside thinking in various disciplines and across the military academic community to develop new ideas for arms control strategies. DTRA will select researchers based on International Security Studies (INSS) proposed research topics, and INSS will administer sponsored research and disseminate the research results through conferences, workshops, and publications.

The work coordinated under this effort continues in FY99 and is expected to continue through FY00. The work is primarily performed by military officers and by civilian faculty and students at the military academies, war colleges, and military degree-granting institutions. Users include the Services.

6.7.1.4 REGIONAL VERIFICATION TECHNOLOGY ASSESSMENT

The mission need is to perform technical assessments that prepare the DoD to understand and evaluate emerging arms control technology objectives in India/Pakistan and the Middle East and the needs for RDT&E support in achieving those objectives. The assessments are needed to provide direction and oversight for the conduct of the arms control RDT&E program and to provide OUSD(AT&L) with knowledge and plans to meet its responsibilities in providing technical experts to support OSD representatives to arms control fora, in enabling prompt execution of Secretary of Defense decisions on arms control issues.

The products are assessments of India/Pakistan and the Middle East, which are structured to assist OSD in projecting relevant technology development needs and plans. The projections will be derived from the assessment of factors such as regional threats, orders of battle, extra-regional implications of any instabilities, and the basis for such instabilities in light of political, economic, military, and cultural factors. The assessments will identify likely arms control objectives that could mitigate the regional tensions and promote stability in the three regions of interest. Each assessment will identify and select candidate verification regimes that can meet those objectives and define verification requirements associated with those selected regimes. The assessments will use these objectives, regimes, and verification requirements to evaluate systems and technologies needed to support implementation of the candidate arms control measures, and to identify monitoring needs.

The users of this support are OUSD(P) and OUSD(AT&L). Potential users of the concepts for verification and compliance identified in the assessments are future negotiating delegations, the Joint Staff, the Services and DTRA/OS. This project should be completed no later than the end of FY01.

6.7.1.5 START III THREAT TEMPLATE

Discussions on the START III treaty regime started in 1999 with the goal of reducing strategic nuclear warheads to 2000-2500 on each side. START III is likely to move beyond simple warhead limits to increased transparency in monitoring dismantlement, nuclear materials, and/or nuclear warhead inventories. The United States is developing the technologies and protocols for a potential treaty verification regime. That regime is likely to be significantly more complex and technology dependent than previous strategic regimes.

The starting point of the project will be an effort to define long-term arms control goals. The equipment and procedures that are negotiated for START III will be setting precedents that will impact follow-on treaties. It is therefore necessary to consider future factors such as reconstitution ability and force structure, as well as current threats when evaluating potential hardware and protocols. This long-term vision is necessary to prevent the negotiation or

development of technologies that may be adequate in the short-term, but incompatible with our long term goals.

This project seeks to provide a comprehensive threat definition to be used for conducting vulnerability analyses for future strategic arms control treaty requirements. This common threat definition would then serve as the starting point for the vulnerability evaluation of treaty components. The definition will describe goals of adversaries and quantify the level of effort and resources that could be expended to meet them. The definition will address specific threats to information, hardware, and treaty procedures. The most likely and most dangerous threat courses of action will also be identified.

6.7.1.6 TECHNOLOGY IMPLEMENTATION (INF/START)

This project supports the mission need to extract the lessons learned that relate to implementing advanced technology in historic arms control agreements (i.e. CargoScan) and other lessons learned during Intermediate-Range Nuclear Forces (INF) Treaty and Strategic Arms Reduction Treaty (START). The lessons learned from negotiations and operational inspections will be captured under this project.

This effort will begin in FY00 and will be accomplished in two phases: Phase I - Data gathering and analysis; and Phase II - Selecting COTS or developing an analytical tool to assist decision makers in order to capture and document experiences gained to formulate a cohesive set of lessons learned that will address concerns during strategic arms reduction treaty negotiations.

During Phase I documentation and data available from negotiation strategies, positions, scenarios and policies resulting from implemented technologies, e.g. CargoScan, RDE for INF, RDE for ALCM discrimination under START will be gathered and reviewed. Interviews with past and present inspectors, policy and technology negotiators, and technology developers supporting the treaty negotiation and implementation process will also be conducted during this period. The information will be compiled and analyzed to establish a comprehensive and structured information hierarchy for later information retrieval on specific topics to extrapolate this information for application to future treaties. Phase I will produce a report which recommends (if warranted) an analytical tool and data acquisition methodology, information management and database development in order to investigate COTS hierarchy software for application as a decision-making tool.

During Phase II a review of commercially available software will be done to select the analytical tool for decision-makers. The database from Phase I will be tailored to the selected software and an approach for implementing the tool to support decision-makers will be recommended. The data from Phase I will be incorporated into the selected analytical tool. This effort will provide a final report and the analytical tool together with all operating manuals and

supporting documentation, which will allow continuous updates to the decision making to be performed.

The users of the result of this effort are OUSD(AT&L), OUSD(P), the Joint Staff, Services and appropriate diplomatic delegations.

6.7.1.7 TARGET MISSILE IMPACTS

The mission need is to assess the impact of all applicable arms control agreements on the use of missiles as targets for U.S. missile defense testing and to develop a guide to, and standards for, assessing such cross-cutting impacts. The results of the study will help DoD arms control policy and acquisitions officials avoid or minimize the impact of arms control agreements on the selection of target missiles and testing procedures in the RDT&E of U.S. missile defense systems.

Over the past few decades, the number of arms control agreement provisions meant to constrain, and sometimes to completely ban strategic and theater nuclear offensive systems, has grown significantly. In addition, the over a quarter-century-old ABM Treaty also imposes earlier constraints on the testing of missile defense systems. Finally, the ABM/TMD Demarcation Confidence Building Measures Agreement (ABM/TMD CBMA) may enter into force in the near future. The combined effects of this labyrinth of arms control constraints have made the selection of target missiles and testing scenarios and procedures quite complex. Providing solid advice for meeting the legal and implied constraints of arms control provisions on testing is becoming increasingly difficult, even for DoD arms control policy, implementation, and compliance officials, who are highly knowledgeable of U.S. treaty obligations.

DoD needs a means of understanding potential impacts of arms control agreements on target missiles from the very beginning and throughout the RDT&E and operational evaluation phase of the life cycles of U.S. missile defense systems. The study will follow a holistic analytic approach that includes but is not limited to, the impacts of the provisions of the START Treaty, the INF Treaty, the ABM Treaty, and the Missile Technology Control Regime (MTCR). The analysis must include the potential impacts of treaty constraints on launch location, booster/airframe physical and performance characteristics, payload/warhead simulations and configurations. In addition, the study must contain an evaluation of the impact that treaty obligations to provide testing information to treaty partners may have on U.S. national security interests.

This project will provide guidelines for organizations involved in missile defense testing to do self-assessments and a formal and well understood process for OSD compliance evaluation. The guidelines encompass the entire life cycle of missile defense systems from the very earliest R&D through the end of operational deployment. The project will assess impacts of treaty-mandated flight information, test range geographic locations, and the outcomes of the next round

of deliberations of the Standing Consultative Commission. Sensor system, space based system, and radar topics must be included to the extent these systems impact test procedures or plans. The Guidelines and Standards document will be published as a formal DTRA technical report.

The results of the analysis will be presented in a briefing (middle of FY00) and documented in a report (3QFY00). A separate guideline and standards document will be prepared (2QFY00). This project was initiated in FY99 and is expected to be completed in FY00. The customers are OUSD(P), OUSD (AT&L/ACI&C), the Joint Staff and negotiating delegations. The users are BMDO and DoD services and agencies involved in missile defense testing and target selection.

6.7.1.8 SPACE ARMS CONTROL ASSESSMENT

This project involves performing a technical assessment that facilitates and enhances DoD analysis and evaluation of the impact on DoD space forces of arms control and/or related diplomatic measures for the prevention of an arms race in outer space (PAROS). The UN Conference on Disarmament (CD) has appointed a Special Coordinator and is considering forming an ad hoc committee on outer space with the mandate to negotiate a convention for the “non-weaponization” of outer space.

The goal of this project will be to develop an assessment in support of the DoD and U.S. negotiators if required to respond authoritatively to CD deliberations concerning non-weaponization of outer space. A report on U.S. policy and DoD positions on arms control regimes for the control of space weapons as well as pertinent international deliberations over the last two decades will be developed under this project. The report will also include critical earlier positions involving the 1967 Outer Space Treaty and the 1972 ABM Treaty. The INF, the START series, and the 1971 and 1988 Nuclear War Prevention Treaties will also be reviewed and highlighted where applicable as well as the U.S.-Soviet ASAT talks in 1970s, the Defense and Space Talks in the 1980s, and the Interagency Study on ASAT Arms Control during the Bush Administration.

This effort will provide a critical assessment of potential arms control approaches including confidence-building measures that could be proposed for the non-militarization or non-weaponization of outer space to identify DoD equities and impact on U.S. national security interests. The assessment in the form of an annotated briefing and report will include the approaches most likely to be strongly advocated by other nations. This project will assess whether such approaches are equitable, effectively verifiable, and enhance the security of the United States and our allies. Verification measures, associated technology concepts, and their associated costs that could be proposed to verify compliance with the approaches will also be identified and assessed.

6.7.1.9 STRATEGIC TREATY NEGOTIATOR'S TOOL (STNT)

START III is anticipated to encompass the full lifecycle of nuclear weapons, weapon components, and materials. Thus, START III treaty negotiators will be required to make rapid decisions on a wide range of treaty and treaty verification issues related to the nuclear weapons and materials lifecycles. Due to the nature of treaty negotiations and the volume of technical information potentially applicable to the START III negotiations, ready availability and versatile organization of information will be critical to reaching the optimal U.S. negotiating position on START III.

A notional concept of a negotiator's tool was developed under the START III Technology Development Program (TDP). This notional tool was based on a hypertext imbedded link web browser architecture. This architecture allows for ready access to data, documents, images, and software tools and applications through a single Generalized User Interface (GUI). This project was further developed as a follow-on task to the START III TDP, providing more detailed technical information on the U.S. weapon handling process. A negotiator's tool based on this concept would provide negotiators with rapid access to the vast quantity weapons and materials lifecycle information necessary for effective START III treaty negotiations. This project will take the concept as developed in the follow-on task to the START III TDP and fully populate a hypertext imbedded link file structure with the full weapons and materials lifecycle information held jointly by the Departments of Defense and Energy. The tool will operate on hardware capable of reading html Version 3.0 hypertext, JAVA, JavaScript, Macromedia Shockwave, and related extensions under MS Internet Explorer 4.0 and Netscape 4.0 or higher web browser applications. The primary emphasis of the project is to fully populate the data set for U.S. and Russian weapons and materials lifecycle information held jointly by the Departments of Defense and Energy. This project will be accomplished in two phases: 1) Phase I will address the U.S. warhead lifecycle, and 2) Phase II will address the Russian warhead lifecycle.

6.7.1.10 ABM ADVERSARIAL ANALYSIS OF TECHNICAL OPTIONS

In August 1999, the United States and Russia began to discuss modifications to the ABM Treaty needed to permit deployment of a limited national missile defense designed to protect against limited long range ballistic missile attacks by states of concern.

This project will support U.S. negotiators in anticipating Russian reactions to U.S. positions by conducting a series of "Red Team"/adversary perspective assessments of candidate Treaty modification proposals and associated verification technology concepts. The goal is to increase confidence in these solutions and enhance their prospects by subjecting them to independent, critical review.

Red Team assessments will identify aspects of each proposal and verification concept that are desirable or undesirable from an adversary perspective, identify

weaknesses/flaws/problems in the proposals and concepts from an adversary perspective, and suggest ways to overcome those weaknesses/flaws/problems that have been identified. The Red Team will focus on assessment from the perspective of Russia. However, it will also identify any issues where the perspectives of the other USSR Successor States or other nations possessing ABM or ballistic missile technology or systems assets differ significantly from those of Russia.

Critical starting points for this project will be the candidate strategic arms control proposals and verification technology concepts identified in the 1998 DTRA “ABM – Offense/Defense” technical assessment, now nearing completion, and any similar proposals identified during the initial stages of the planned DTRA “ABM Lessons/Cross Treaty Synergy” technical assessment.

6.7.1.11 ABM LESSONS AND CROSS TREATY SYNERGIES

The ABM Treaty Discussions initiated in August 1999 may result in significant changes in the ABM Treaty or new provisions for which verification and implementation strategies may need to be developed. These strategies may be improved by reference to the history of the ABM Treaty and to technological developments that have occurred since 1972.

This project will provide a thorough review of ABM/TMD system development and related treaty/negotiation history. The goal is to produce a baseline understanding of what has occurred from the late 1960’s through the 1999-2000 ABM discussions in order to establish a referential framework for follow-on RDT&E resource allocation decisions. This will promote stability, lessen the likelihood of inadvertent noncompliance and reduce unanticipated constraints on military RDT&E.

Pre-treaty ballistic missile defense system developmental efforts, treaty initiatives, negotiation and ratification history, subsequent state party compliance records and post-ratification technology advances in defensive systems will be examined and critical lessons highlighted for RDT&E managers and USG decision-makers. Treaty compliance determination criteria utilized to assess “borderline” systems will be closely examined to judge the reliability and enforceability of performance and demarcation standards.

Finally, originally unanticipated developmental restraints that arose from later interpretations of the ABM Treaty either in isolation or in relation to other agreements will be examined and detailed for those involved in the present ABM Treaty discussions. These unanticipated developmental restraints will include the impacts of other strategic treaties such as INF and START.

6.7.1.12 VOTKINSK CONTINUOUS MONITORING SYSTEM (CMS) UPGRADE STUDY

Under the Intermediate-Range Nuclear Forces (INF) Treaty and the Strategic Arms Reduction Treaty (START), continuous portal monitoring of missile assembly or production plants is permitted in the former Soviet Union at the Votkinsk Machine Building Plant (VMBP). This facility was formerly used to assemble the SS-20 missile.

Continuous portal monitoring under the INF Treaty began in the former Soviet Union in July 1988. The treaty permits portal monitoring to continue until May 2001. The breakup of the Soviet Union did not affect U.S. continuous portal monitoring operations under INF. INF portal monitoring permits U.S. inspectors to visually observe and physically measure all vehicles exiting the Votkinsk plant that are large enough to contain an SS-20.

The U.S. began START portal monitoring at Votkinsk and Pavlograd, Ukraine, in January 1995. The U.S. ceased monitoring operations at Pavlograd in May 1995. Subsequently, Ukraine declared Pavlograd as a facility subject to suspect site inspections. START portal monitoring at Votkinsk will continue indefinitely, as long as treaty-accountable items are assembled there. After such assembly ends, portal monitoring will continue for one more year.

Installation of the Continuous Monitoring System (CMS) at Votkinsk was completed by the U.S. in 1989. This system is used to provide control of road and rail traffic through the portal, dimensional measurement of road traffic, video surveillance, electrical power, and data collection. The CMS has experienced several failures over the years. The stockage of spare parts for outdated components of the CMS has become problematic. The impending end of the INF Treaty provides an opportune time to make START-specific upgrades to the CMS. The purpose of the Votkinsk Continuous Monitoring System (CMS) Upgrade Study is to determine the requirements for this upgrade.

6.7.1.13 MULTILATERAL STRATEGIC TREATY VERIFICATION REGIMES

The United States and Russia are unlikely to reduce their strategic nuclear weapons to levels comparable to that of other nations if the latter arsenals remain unconstrained. It is therefore likely that a key element of such significant reductions would be that they be accomplished via multilateral strategic arms control treaties.

The Multilateral Strategic Treaty Verification Project seeks to provide long-term technology development recommendations for verification of potential multilateral strategic treaty regimes. The project will attempt to define the scope of plausible provisions for such multilateral strategic treaty regimes and explore their information requirements and practical verification implications, with particular emphasis on regimes and technologies required for implementation. Negotiation and implementation of multilateral strategic treaties, their regimes,

and their associated verification technologies are liable to require a new paradigm in technology development, acceptance, and deployment. Understanding this new paradigm, as well as the roles of specific recommended technologies, will be critical to the DTRA arms control technology development program.

ARMS CONTROL REFERENCE AND DISPLAY CENTER

This project is funded across the treaties. A description can be found in 5.7.1.8.

6.7.2 TECHNOLOGY DEVELOPMENT CATEGORY

6.7.2.1 JOINT DOD/DOE INTEGRATED TECHNOLOGY IMPLEMENTATION

The mission need is to demonstrate the ability to indicate the presence of nuclear weapons or their components. Such a capability is deemed necessary to implement potential future arms control regimes involving strategic and tactical nuclear weapons and/or weapon components. The purpose of this activity is to provide a coordinated and comprehensive framework for addressing radiation measurements and other activities to support U.S. efforts directed toward current arms control and nonproliferation agreements. In particular, this activity will focus on a START III warhead regime. Because of similarities in some of the technologies being considered for other regimes (e.g. Mayak Transparency and Trilateral Initiative), this activity will strive to avoid duplication of effort and take advantage of synergies through careful coordination among other organizations, namely the DoD DTRA Arms Control Technology (OST), the DoD DTRA Cooperative Threat Reduction (CTR), the DOE/NN International Policy and Analysis Division (NN-42), and the DOE/NN Office of Research and Development (NN-20).

The activity of radiation measurements and supporting efforts is designed to determine those measurements that could be performed on U.S. warheads, warhead components, and warhead-like objects, such as Nuclear Explosive-Like Assemblies (NELAs) or Joint Test Assemblies (JTAs), for the purpose of establishing and exploring the limitations of criteria to provide confidence as to the identification of the object. These measurements will provide the United States with the relevant information needed to take a proactive role in negotiating agreements that may involve the use of radiation measurements on nuclear warheads or nuclear warhead components in the active and retired U.S. stockpile, such as may be encountered in START III.

This activity takes into account the results of radiation measurements performed in 1997 at the Pantex plant and the progress that has been made under the Mayak transparency to establish a set of criteria for providing confidence in the presence of a warhead component. This past work provides an initial, though limited, set of radiation measurements, as well as a set of technical attributes, in order of increasing confidence, against which measurements and equipment

can be tested for applicability, reliability, accuracy, reproducibility, ease of operation, cost, availability in the near term, and protection against the release of sensitive information.

The original Pantex radiation measurement campaign (1997) was designed around nuclear warhead and warhead component radiation signature analysis. In these measurements emphasis was placed on the comparison of the radiation signature obtained from a given object with previously obtained signatures from the same or other types of objects. Although this one-to-one comparison, or “template” approach was successful in the 1997 campaign, for certain scenarios, it will also be necessary to explore the ability of the instrumentation to measure certain key “attributes,” such as isotopic ratios, fissile mass, presence of weapons-grade material, etc. Such attributes form the basis for the Mayak criteria. Additional measurements, emphasizing attributes, will be taken on a larger and more diverse population of warheads and components, as well as warhead-like objects, e.g., NELAs and/or JTAs that could be encountered in the START III context.

Of particular importance for the use of any radiation measurement equipment on any U.S. warhead or warhead component, is the potential for release of sensitive information. Consequently, the activity includes security and vulnerability analyses, including red teaming, of the instrumentation, procedures, and, especially any information barriers used in the radiation measurements. Such analyses are critical for a reciprocal regime, such as START III. The activity includes conducting demonstrations of selected equipment and procedures to the Russians in appropriate scenarios.

This activity will initiate in FY99 and will continue through FY00. Emphasis for FY00 will be on developing second-generation measurement systems that implement the information barrier principles, red-teaming those systems, and developing several alternate technologies for their potential applicability to a START III regime. The portion of the activity that will be funded by DTRA/OST includes projects addressing equipment design, test and evaluation and demonstration. The products support OUSD(P), OUSD(AT&L), the Joint Staff and U.S. negotiating delegations. Potential users are the Services and on-site inspectors.

6.7.2.2 MONITORING AND INSPECTION

6.7.2.2.1 COOPERATIVE TECHNOLOGY INITIATIVE

The objective is to improve on or develop inspection and monitoring tools or systems deemed necessary to implement potential future strategic weapons and materials arms control regimes as well as improve present warhead inspections methods. The verification of nuclear weapons dismantlement and warhead components special nuclear material monitoring requires Russian and U.S. technologies that will not reveal critical nuclear weapons design information while at the same time providing high confidence that the monitored item is what it is purported to be.

Ratification by the Russian Federation of START II has intensified discussions on a START III treaty, which is expected to establish warhead inventory transparency measures. Work has been ongoing in the U.S. on several technologies, which can be used in monitoring nuclear warheads and components under a warhead inventory transparency regime and which will not reveal critical information. Russian Science Academies and their labs also have been considering such technologies and may have innovative approaches to their application in arms control verification. The best technologies for future strategic verification regimes will be more easily negotiated and better accepted if there is a history of joint U.S.-Russian work on developing these technologies.

The International Science and Technology Center (ISTC) in Moscow has, for several years, been funding former weapon scientists to work on problems other than those related to weapons projects. This established relationship with the Russian community can be advantageous to the arms control arena. In particular, it is thought that giving Russian scientists charters to do innovative as well as comparative projects would be the best way of encouraging the use of advanced technology for arms control monitoring.

This project initiated with a call for proposals to the academies best suited for doing research into identification of warheads and accounting for strategic nuclear weapons. Proposals received in response were reviewed by DTRA and selected by the ISTC board in the normal fashion. A joint proposal from the Institute for Automatics and the Russian Federal Nuclear Center titled "Technology development of inspection control over dangerous items, including radioactive materials and explosives, during their storage, transportation and elimination" was selected.

The Russian Investigators will prepare a Phase I report describing the technology, the concept for applying it to arms control problems and the results of demonstrations and tests. DTRA will evaluate each technology. If the proposed technology appears to be of sufficient maturity, have identifiable uses, and represent an improvement in the state of the art, the second phase will be initiated.

In Phase II, the Russian Investigators will perform technology development. The brassboard model will be upgraded to a fieldable model, which can be tested in actual situations projected for the START III regime. Design documentation, drawings, and test reports will be delivered. The working model will be delivered and compared to other technologies and evaluated by U.S. verification technology engineers for compatibility with U.S. operations, security of data, and cost effectiveness.

This work was initiated in FY99. Selection of the first Phase II concepts will take place in mid-FY00 and work on these is expected to continue through FY01. The customers are on-site inspection activities, the United Nations, and the International Atomic Energy Agency.

6.7.2.2.2 INFRARED IMAGING

The nuclear processes that accompany spontaneous fission of plutonium and uranium release energy that ultimately becomes heat that raises the temperature of the host material. The temperature rise is very small and depends on the fission rate and on the thermal isolation of the material. If the material is in contact with the surface of the container, or is otherwise thermally coupled to it, "hot spots" arise on the surface. These radiate heat energy at infrared wavelengths, and also transmit energy to air or other materials in contact with the outside surface.

Sensitive digital cameras can detect this infrared radiation, and map out the temperature variations on the surface of the container. Such camera technology has evolved for many years, and is commercially available, though highly sensitive cameras are expensive.

A simpler, less sensitive alternative technique may be to use thermochromic liquid crystal films. These films change color when exposed to heat. Thus a sheet, or sheets, of film can be wrapped around a container that houses fissile material, and the temperature pattern on the surface of the container will be displayed as a contact image on the film.

Remaining challenges include interpretation of the recorded images. DTRA considers infrared imaging as a potential candidate for inclusion among technologies for support of START III.

6.7.2.2.3 MULTI-TREATY INSPECTION AIDS/TOOLS - ULTRASONIC WARHEAD IDENTIFICATION

This mission need develops inspection training aids and tools to provide an enhanced inspection and monitoring capability in support of the START II/III treaties. Under this project, proof-of-concept demonstrations will be conducted to validate technology applications and concepts identified in the Inspection Aids/Tools Assessment effort to support all START treaties.

The project will confirm, through an external sensing system, that a known container structure encloses a known physical structure, such as a nuclear warhead, without divulging critical nuclear weapons design information. The confirmation must occur rapidly, and the system must perform with high accuracy. This project develops an acoustic system, Multi-Treaty Inspection Aids/Tools (MTAT-1) to meet these requirements. MTAT-1 is an extension to the work performed on the successful swept-frequency acoustic interferometer (SFAI), which is an ultrasound technique used to identify chemical weapon types inside shell casings.

MTAT-1 will use specifically designed acoustic signals to identify different physical aspects of the container/warhead system. By analyzing the acoustic signals using advanced signal

processing methodologies, and combining the different physical aspects resulting from the acoustical analysis, a unique signature of the system is provided regardless of the similarity in the design of systems.

The performer will conduct a proof of concept demonstration for the purpose of validating the efficacy of any future investment and development of this technology.

Specific tasks are as follows:

- Initiate system design and development for proof of concept: This task will provide the analysis to substantiate the methodology and provide an initial system design for the proof of concept. The system design will be oriented to support a quantitative demonstration of the concept.
- Construct proof of concept equipment: This task will implement the design to provide a proof of concept. The constructed equipment and software will be directly applicable to a future final equipment design. All software development will follow procedures and documentation as specified by the government.
- Conduct proof of concept demonstration: This task will exercise the proof of concept equipment to provide quantitative values for the system. The proof of concept equipment will perform measurable functions as specified by the government. The government will participate in the monitoring of the collection of quantitative data during the concept demonstration. The quantitative data will be analyzed to represent the outcome of the concept demonstration.
- Verify cost and performance criteria: This task will validate the cost to implement a production version of the equipment in quantities as provided by the government. Performance criteria, as identified by the government, will be established for the production equipment. A cost trade-off with performance criteria will be performed.
- Prepare technical data package: This task will prepare and collect all project related data, including design and design plans, software documentation and source code, quantitative values resulting from the proof of concept and the analysis thereof, and cost and performance data.
- Prepare Final Report: This task will prepare a final report that discusses the technical data package, and the pertinent results of the quantitative data analysis. A recommendation, substantiated by results from the proof of concept, will be provided.

This project will result in a proof of concept demonstration in the form of a developmental test. The project will also produce a report that validates the practicality, utility, and mitigation of risk of continued development of identified technologies for multi-treaty application. The report will also document performance and cost criteria.

Work will begin in FY00. Customers include OSD, DTRA, and U.S. negotiating delegations.

6.7.2.2.4 COMPLIANCE ANALYSIS TOOL

The New York Agreements of September 26, 1997 related to the ABM Treaty provide new standards to evaluate compliance with the ABM Treaty. Beyond reaffirming the “lower velocity” TMD demarcation criterion stated at the Helsinki summit, the Agreements establish three additional criteria for allowed TMD systems:

- TMD systems will not “pose a realistic threat” to the strategic nuclear forces of another party to the ABM treaty.
- TMD systems “will not be deployed by the Parties for use against each other.”
- The scale of TMD system deployment “in number and geographic scope” will be “consistent” with programs for theater ballistic missiles confronting that Party.

Under this project DTRA will develop a simulation specifically designed to assess whether TMD system development programs are consistent with these criteria. The simulation may also be used to develop additional or alternative demarcation criteria that may be incorporated directly into treaty implementation directives. In the farther term, the simulation’s capabilities may be extended to address NMD issues.

The simulation will model strategic ballistic missiles, ground-based interceptors, and acquisition and tracking radars. It will be able to assess the capability of U.S. and Russian TMD systems against the strategic ballistic missiles of the other side in one-on-one and many-on-many engagement scenarios. The primary output will be the footprint of the TMD system displayed geographically.

6.7.2.2.5 MEGAPIXEL GAMMA CAMERA

The Megapixel Gamma Camera would monitor the intensity and spectrum of gamma rays emitted from the fissile components of nuclear warheads. It would operate at room temperature and be able to identify the location of radiation sources and give fairly good descriptions of the radiation spectrum.

The camera’s detection and imaging mechanism is to pass the gamma rays through an imaging plate before they impinge on the scintillator plate. Most of this light is then internally reflected within the scintillator, passes out its sides, and is coupled into photo-multiplier tubes for energy determination. A lens images the remaining light, which radiates from the scintillator face, onto a PAPA photon counting imager.

The Megapixel Gamma camera is a spin-off of NASA-sponsored work developing UV and X-ray astronomy cameras. Other uses of the technology will probably be in medical imaging. In a START III warhead accountancy scenario, DTRA would expect the Megapixel Camera to be used for relatively wide area monitoring and radiation templating.

6.7.2.2.6 CONSTELLATION TECHNOLOGY CORPORATION

The DTRA is working with Constellation Technology Corporation (CTC) in the field of nuclear detection, analysis, and forensics systems to develop semiconductors for room-temperature high-energy radiation detection. CTC has developed a process for growing HgI₂ crystals, which it incorporates into these detectors. The objectives of CTC's efforts for DTRA are: 1) to develop, compare, and demonstrate systems and supporting analysis software capable of indicating the presence of nuclear weapons or their components; 2) to support the nonproliferation requirements of the International Atomic Energy Agency (IAEA) complementing the U.S. Support Program by considering potential IAEA applications during detector development; 3) to promote on-site analysis of Chemical Weapons Convention (CWC)-related samples by advancing existing capabilities for on-site determinative analysis, sample preparation, and non-destructive evaluation; and 4) to standup and operate a laboratory with particulate analysis capabilities.

To better perform high-resolution nuclear spectroscopy, CTC aims to develop room-temperature portable gamma ray spectrometer systems and related analysis software that will yield resolutions similar to logistically more burdensome liquid nitrogen-cooled detectors. Electromechanically cooled High-purity Germanium (HPGe), Mercuric Iodide (HgI₂), Cadmium Zinc Telluride (CZT), and Xenon proof-of-concept detectors will be developed, since each offers unique advantages, and evaluated under operational conditions.

Based on their HgI₂ crystal technology, CTC has developed the hand-held Radiation Intensity Counter (RIC) for gamma and X-ray detection. RICs have been sent to a number of U.S. organizations and to the IAEA for evaluation, and show promise as a personal monitoring device, a trigger for other monitoring systems, or as a counter for safeguards purposes. Also using HgI₂, CTC has developed a notebook-sized, C-size battery-powered, hand-held gamma spectrometer. This medium resolution device will detect gamma radiation using HgI₂, CZT, or Sodium Iodide (NaI) modules, and display an analysis of the spectra.

DTRA's work builds on earlier efforts funded by grant from the Nuclear Treaties Office through U.S. Army Space and Missile Defense Command and the Pinellas (Florida) County Industrial Council to CTC.

6.7.3 EMERGING TECHNOLOGY

Technologies are developed to address specific monitoring or information needs. DTRA has usually found that the best technologies are those that address a well-defined requirement for a certain measurement or identification. Periodically, however, a new technology arises that has the potential to change the entire structure of verification monitoring. Perhaps the best known recent example is the explosive growth in computational power with the development of personal computers and microprocessors. The capability of making complex analyses rapidly and easily in the field affords the possibility of a high-confidence measure without either a specialized analyst or an extreme operational impact. The Emerging Technologies program is one means whereby DTRA searches for such high-payoff technologies.

The normal DTRA technology project develops an instrument to fulfill a given requirement as enunciated by a treaty or negotiators. The Emerging Technologies program reverses this procedure. No distinct requirement is defined for the technology. Instead, the technology is investigated to see how it might be applied to arms control, even if that would require modifications to procedures. Because of the freedom associated with such an approach, only new or emergent technologies that might provide sufficient advantage to justify altered procedures are allowed to participate in the Emerging Technologies program. Each year, candidate technologies are considered for funding as Emerging Technologies and a few are funded.

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SECTION 7

DoD PROGRAM SUPPORTING CHEMICAL ARMS CONTROL

7.1 OVERVIEW

This section is the FY 2000 – 2001 Program Plan supporting chemical weapons arms control.

7.2 ARMS LIMITATIONS IN CONNECTION WITH CHEMICAL ARMS CONTROL AGREEMENTS

The following treaties and agreements are currently being supported (details are provided in Appendix B):

- Chemical Weapons Convention

Activities within this treaty that will or could impact the chemical arms control program include:

- Potential changes or refinements in declaration and implementation requirements impacting numbers and the nature of inspected facilities and DoD obligations;
- Additional requests, consistent with Senate Condition 4 to ratification of the CWC, for technical assistance in support of the Organization for the Prohibition of Chemical Weapons (OPCW) and its Technical Secretariat in The Hague;
- Potential changes in technologies and inspection procedures used by the OPCW;
- Conditions imposed by the Senate in its advice and consent to U.S. ratification of the CWC;
- Requirements imposed by CWC implementing legislation, e.g. reporting CWC costs to Congress and prohibition against extraterritorial sample analysis;
- Possible development of a new bilateral inspection agreement between the U.S. and the Russian Federation in lieu of the Bilateral Destruction and Non-Production Agreement.
- The conduct of the first challenge inspection under the CWC.

The OPCW, United Nations Monitoring, Verification and Inspection Commission on Iraq (UNMOVIC) and other foreign entities are listed as potential customers in several of the projects described in this section. Any transfers of equipment and technology to these customers must, of course, comply with U.S. export control laws, regulations and policies.

7.3 CHEMICAL ARMS CONTROL PROGRAM GUIDANCE

In addition to the DoD guidance in Section 2.4 of this Program Plan, there are five DoD considerations that guide the CW arms control program. These are:

- The United States has a large CW stockpile and infrastructure that will be the subject of numerous inspections until destroyed. Systematic inspections of DoD declared facilities, as well as challenge inspections at any CONUS or OCONUS facility, pose a risk of compromising national security and confidential business information unrelated to CW. To protect national security and preclude the loss of sensitive information unrelated to the purposes of the CWC, the DoD must evaluate and influence procedures and technology used by the OPCW.
- Of all USG departments, DoD faces the most extensive inspections and, therefore, must ensure that the inspection regime is effective without exposing DoD equities to unacceptable risks, allegations of non-compliance, or safety or environmental hazards. The DTRA CW arms control RDT&E Program must provide technical support to ensure that DoD equities and safety and environmental concerns are considered when resolving verification issues. The program must prepare and equip credible technical experts who can be called upon during and after implementation activities to provide technical data to support DoD.
- The United States is one of the world's major declared possessors of chemical weapons and their production facilities. As such, USG compliance with the letter and spirit of the agreements' provisions will be closely scrutinized by other agencies of the U.S. government, the public, and other nations. DoD must be prepared for such scrutiny at more than forty declared and routinely inspectable government facilities. The Operations and Maintenance Program is essential to ensure DoD's extensive obligations are fully and successfully carried out in an efficient and cost-effective manner.
- On-Site inspection activities provide the most significant means of confirming compliance with the CW arms control agreements. The DTRA CW arms control RDT&E program endeavors to find solutions to gaps in implementation and compliance technology. Filling these gaps increases U.S. confidence that compliance concerns will be discovered and resolved. The program pursues cost-effective detection technologies and defines procedures to influence on-site analysis activities.
- The majority of CW inspection activities conducted at DoD facilities will take place in a hazardous environment. Therefore, the DTRA CW arms control RDT&E program endeavors to identify implementation technologies and methodologies that promote personnel safety.

7.4 CHEMICAL ARMS CONTROL PLANNING ASSUMPTIONS

See Appendix C.

7.5 OPERATIONS AND MAINTENANCE PROGRAM

7.5.1 INTRODUCTION

Operations & Maintenance funding provides DoD with the capability to plan, train, ensure readiness, and implement treaty obligations on a routine and sustained basis throughout the program period. Funding estimates will be based on operational experience in conjunction with general DoD planning guidance and planning assumptions. Funding must be sufficient to ensure that DoD can fully comply with international treaty obligations.

7.5.2 O & M SUPPORTING CWC AND OTHER INTERNATIONAL REPORTING AGREEMENTS

7.5.2.1 DTRA

CWC. The DTRA is charged with the planning and conduct of escort missions under the CWC.

- Escort missions;
- Telecommunications;
- Transportation;
- Facilities preparation; and
- Logistical and management support.

The CWC entered into force in April 1997. In FY00, escort activity for OPCW inspectors and support to OPCW monitoring operations will continue. If OPCW inspections occur at non-DoD facilities during FY00, DTRA will provide escort support on a reimbursable basis through a Memorandum of Agreement with the Department of Commerce, if such support does not interfere with its primary mission.

DTIRP. DTRA is the DoD Executive Agent for the Defense Treaty Inspection Readiness Program, which provides security countermeasure support to all USG facilities inspectable under all arms control treaties and agreements. DTIRP will also provide assistance, if requested, to both commercial and government facilities inspectable under the CWC.

7.5.2.2 ARMY

The Army will take all actions necessary to implement and ensure compliance with the CWC at all affected CONUS and OCONUS Army installations, facilities, and activities. This includes declared storage, former production, demilitarization and permitted Schedule 1 facilities

at 13 Army installations. Implementation activities include: maintaining the DoD data management systems, i.e., the Chemical Accountability Management Information Network (CAMIN); planning and preparing for inspections at declared facilities; preparing all Army installations for challenge inspections; conducting implementation and inspection activities; supporting destruction operations, and providing sampling and analysis capabilities to comply with DoD requirements for safety, protection of sensitive information, as well as CWC compliance. Soldier and Biological Chemical Command (SBCCOM) is the systems administrator for the CAMIN. While the Army will maintain one certified laboratory to aid CWC implementation activities, support to other DoD components and other USG agencies will be on a cost reimbursable basis. This capability will provide the U.S. the ability to confirm analysis of samples collected and analyzed by inspectors.

7.5.2.3 NAVY AND MARINE CORPS

The Navy and Marine Corps program ensures preparedness for hosting international inspection teams at Navy or Marine Corps facilities. The DON program contains four elements as follows: 1) formal written procedures, checklists and guidance; 2) an exercise element to practice procedures to support Navy and Marine Corps facilities subject to challenge inspections; 3) a training element that includes awareness training for all Navy and Marine Corps facilities, and technical training for support team personnel; and 4) a database to support CWC-required declarations, and CWC-required obligations for consultation and fact-finding discussions. The DON controls costs by using a support team (Tiger Team) of CWC treaty and security experts who deploy to help prepare facilities for inspection. The DON program validated its plans and readiness to prepare facilities for inspection through lessons learned during annual mock inspections. Personnel, travel and per diem costs are required for the conduct of training, exercises, assistance team visits, and ground truth assessments.

7.5.2.4 AIR FORCE

The Air Force is charged with preparations for hosting foreign inspection teams for chemical arms control agreements at Air Force facilities and organizations. These include a schedule of mock inspections, seminars, and tabletop exercises to ensure compliance with relevant agreements. Air Force facilities worldwide may be captured by a CWC Challenge Inspection and must be prepared to host these intrusive on-site events. Additional emphasis has been placed on preparing CENTAF facilities as Saudi Arabia, Oman, Kuwait and Qatar have ratified the CWC.

7.6 PROCUREMENT PROGRAM

DTRA has funding to acquire equipment to facilitate its projected inspection and escort missions.

7.7 RDT&E PROGRAM DESCRIPTION

In the FY00-01 time period the chemical arms control RDT&E program primarily focuses on projects that enable sampling and analysis to be conducted on-site during CWC inspections without revealing sensitive DoD information that is not relevant to the CWC. The projects address the following critical Mission Need Areas as follows:

- **Policy Support and Analysis** - provide OUSD(P), OUSD(AT&L), and the Joint Staff with expertise, information and tools necessary to assist DoD negotiators in drafting and negotiating USG positions on chemical and biological related treaties and agreements.
- **Non-Destructive Evaluation (NDE)** - provide current, state-of-the-art technologies for characterizing the contents of munitions and containers without direct sampling.
- **On-Site Analysis** - provide technologies for preparing, screening, and analyzing samples at the site of a CWC inspection.
- **Compliance Support (CW)** - provide DoD the technology and tools required to manage and implement its responsibilities under CW treaties and agreements including a data and notification management system that satisfies USG treaty/agreement mandated report needs.

7.7.1 TECHNICAL ASSESSMENTS CATEGORY

7.7.1.1 OFFICE OF THE SECRETARY OF DEFENSE SUPPORT

This project provides Policy Support and Technical Analysis. The requirement is to provide CW and BW treaty compliance and implementation support to the offices of OSD Strategy and Threat Reduction/Threat Reduction Policy/Non-Proliferation Policy, and the OSD Acquisition, Technology & Logistics CW Treaty Manager. This requirement is characterized by providing continuing support in the following areas: 1) negotiations; 2) development and analyses of reports;

3) assessments of plans; 4) evaluation of program execution; 5) briefings and reports; 6) issue papers; 7) development of minutes or summary reports of briefings; 8) assessments of the effectiveness of U.S. implementation of, and compliance with, chemical arms control activities; and 9) support for conferences and workshops. The OSD support is related to all BW and CW arms control treaties and agreements, to include: the BWC and CWC. This project is expected to continue through FY05. The customer is OSD.

7.7.1.2 REVCON PREPARATORY ANALYSIS

This project will commence in FY00 and will support the Policy Support and Analysis Mission area. The CWC calls for a Review Conference (REVCON) to be convened five years after the CWC enters into force. This REVCON, which may be convened during calendar year

2002, will review the operation of the convention and “shall take into account any relevant scientific and technological developments.” This project will serve two purposes. First, it will identify technologies and methods that may assist DoD in its CWC implementation and compliance requirements with the intent of gaining international acceptance of those technologies and methods. Second, this project will provide the resources necessary to evaluate the impact of potential REVCON changes to the CWC’s implementation requirements on DoD equities.

7.7.1.3 CWC IMPLEMENTATION ANALYSIS

The projects within this program area support both the On-Site Analysis and the Policy Support and Analysis Mission Needs. The CWC states that "where possible, the analysis of samples shall be performed on-site." This is consistent with the Senate's Condition 18 for U.S. ratification of the CWC, which requires U.S. samples to be analyzed in U.S. territory. It is also consistent with DoD policy designed to prevent potentially sensitive materials from leaving inspection sites. This requires state-of-the-art sample collection, screening, preparation, and determinative analysis methods/equipment be available to implement the CWC inspection regimes. In order to meet internationally accepted laboratory practices, DTRA requires that stringent quality assurance and accountability standards be met; and that analytical results be credible and replicable.

The following projects will be undertaken in this program area:

- Analytical Peer Review
- Spectral Data Review
- Fourier Transform Microwave (FTMW) Spectroscopy

Analytical Peer Review: This project supports all Mission Need areas by ensuring that analytical results developed by DTRA performers are credible and replicable. Additionally, sample collection, handling and analytical procedures required to demonstrate compliance with the CWC by the United States and other parties must meet stringent standards for quality assurance and accountability. A technical peer review process ensures that DTRA-developed methods and procedures meet those standards.

The following efforts will be undertaken in this project:

- Technical Products Review: DTRA performer analytical products and documents will be reviewed to verify "good science" and “quality of product”, including consistency with established laboratory procedures and accepted baseline data.
- Laboratory Assistance: Assistance will be provided to other DTRA performer laboratories, as required, and to DTRA in monitoring the Joint Method Development Program.

- Software Testing: Alpha and beta testing will be conducted on analytical instrument software developed by DTRA performers.
- Quick Reaction Support: Quick reaction efforts (technical analysis, non-papers, demonstration plans, test plans, etc.) will be prepared to address specific technical issues or problem areas in support of the U.S. interagency process and DoD representatives to the U.S. Delegation to the OPCW.

Spectral Data Review: This project ensures that analytical spectra (mass spectra, NMR, Infrared, and Gas Chromatography Retention Index data) accepted into the OPCW database are appropriate for inclusion and of good technical quality. These spectra will be a key tool used with determinative instrumentation that will provide data relative to an inspected State Party's compliance with the CWC.

Fourier Transform Microwave Spectroscopy: Fourier Transform (FTMW) Spectroscopy is an instrumental technique that is capable of detecting chemicals directly from air samples. Air is introduced into the instrument where the rotational spectrum of molecules is measured. Unambiguous identification is conducted using FTMW spectroscopy, as each chemical compound has a unique rotational spectrum. Therefore this technique has extremely low false-positive identification rates. The Optical Technology Division at NIST has pioneered the development of this technique for a variety of analytical applications. FY00 efforts will further expand the CW target analytes investigated using this detection technology. This effort leverages research funded by SBCCOM and NIST.

7.7.1.4 ADVANCED NDE FOLLOW-ON

This program area supports the non-destructive evaluation (NDE) mission area by providing an independent technical assessment of the efficacy and efficiency of technologies being considered for NDE use. In FY00 this program will assess the feasibility of advanced-NDE (ANDE) technologies to include non-contact capability and reduced geometric constraints.

7.7.1.5 CW DATABASE MANAGEMENT

This program area supports the Compliance Support, and Policy Support and Analysis Mission Needs by providing a quick reaction analytical capability to support DoD representatives to the U.S. Delegation to the OPCW, and by maintaining a current database of reference documents relative to the CWC.

The Analytical Support project within this program area will provide quick turn around evaluations and analytical efforts as necessary. Efforts may include participation in cooperative programs if a unique capability is required, or if additional laboratory resources can enhance the

QA/QC of the project and maximize the credibility of results. Additionally, the CW Treaty Reference Collection will be updated by adding new references, as they become available.

7.7.1.6 ARMS CONTROL TECHNOLOGY REFERENCE AND DISPLAY CENTER

This project is jointly funded across all treaty areas. See project description at 5.7.1.8.

7.7.2 TECHNOLOGY DEVELOPMENT CATEGORY

7.7.2.1 ADVANCED NDE

This program area supports the NDE and On-Site Analysis Mission Needs by enhancing existing instrumentation, or applying new technologies to develop a single, multi-functional instrument to meet the NDE program criteria. The instrument will provide a more efficient, accurate, rapid and intrinsically safe means to identify the contents of chemical agent containers (including e.g., munitions, ton containers, spray tanks, rails cars). Container identification will take place without direct sampling.

The following projects will be undertaken in this program area:

- ANDE
- Mini-PINS

ANDE: The advanced NDE (ANDE) will continue development of a non-contact enhancement of the Swept Frequency Acoustic Interferometer (SFAI) technology based on the completion of proof of concept data analysis. This project will also leverage existing work to overcome composition and geometric limitations.

Mini-PINS: Field testing will be conducted on the miniaturized Portable Isotopic Neutron Spectroscopy (mini-PINS) prototype system. Also, this project will support algorithm development to enhance the ease of equipment use and decrease analysis time.

7.7.2.2 SAMPLE PREPARATION

This program area supports the On-Site Analysis Mission Need by sponsoring projects to investigate faster and more accurate sample preparation methods and procedures to minimize the use of hazardous solvents.

The following projects will be undertaken in this program area.

- Joint Method Development
- SFE Re-Engineering

Joint Method Development: This project identifies and fills data gaps related to a sample preparation method for GC/MS analysis which was developed and is being evaluated by the U.S. and the Finnish Institute, VERIFIN. In FY00, the focus will be on the analysis of air and decontamination solution matrices. In addition, procedures for extracting nerve agent VX from soils will continue to be modified.

SFE Re-Engineering: Supercritical Fluid Extraction (SFE) is an approach for analytical sample preparation whereby organic extracts of analytes can be prepared in as few as ten minutes as compared to several hours using traditional solvent extraction methods. Additionally, SFE uses at least one order of magnitude less solvent and produces a significantly lower volume of hazardous waste. These aspects are very significant when considering sample preparation logistics in the field. A prototype SFE has been evaluated. The SFE will now be re-engineered and modified to enhance its utility, durability, and flexibility so that it may be used on-site during related CW related inspections.

7.7.2.3 ON-SITE SCREENING

This program area supports the On-Site Analysis and NDE Mission Needs by developing technologies capable of rapidly screening and categorizing CW scheduled chemicals on-site during inspection or investigation activities. Once developed these technologies are transferred into the open market for use during arms control activities.

The following projects are included in this program area:

- SIMS Technology
- Evaluation & Re-Engineering of CW Screening Technologies
- Low Power Field Portable Gas Chromatography
- Threshold Photo-Ionization Mass Spectrometry, and
- Chemical Agent Microsensor

SIMS Technology: Secondary Ion Mass Spectrometry (SIMS) is a surface analysis technique that permits identification of chemicals that reside on the upper boundary layers of solid surfaces (e.g., chemical residue coating the surface of soil, rock, concrete, metal, or other substrates). No sample preparation procedures are required to conduct the analysis. Sample surfaces are bombarded with energetic particles producing secondary ions that are measured using mass spectrometry techniques. Idaho National Engineering and Environmental Laboratory (INEEL) has developed a prototype SIMS device. During FY00, INEEL will evaluate the degradation pathways of chemical information on specific degradation compounds that would be indicative of past CW use. Also, the ability to downsize the current instrument configuration will be investigated.

Evaluation & Re-Engineering of CW Technologies: Screening environmental samples to eliminate those not containing treaty prohibited chemicals is a critical factor in meeting the timelines involved in CWC treaty inspections. This project evaluates several new technologies for sensitivity, selectivity, portability, speed and ease of use. It also supports selected modification of instruments to allow for their integration into existing protocols.

Low Power Field Portable Gas Chromatography: A prototype portable gas chromatography (GC) has been developed for use as a sample screening device. The technology uses a “safe inlet” preconcentrator designed under a Phase I SBIR award. This inlet is coupled to an advanced design very low power temperature programmable GC column and a dual chemical Pulsed Flame Photometric Detector (PFPD). The detector achieves low detection limits and responds only to phosphorous- or sulfur-containing compounds. The prototype instrument will be challenged with CW agent vapors in a surety laboratory environment. Instrument hardening and prototype evaluation will be conducted in FY00.

Threshold Phot-Ionization Mass Spectrometry: This project will develop a prototype time-of-flight (TOF) mass spectrometer (MS) system using a novel sample ionization technique known as photo-ionization. This type of ionization produces “fragment-free” mass spectra ideally suited for the purpose of screening samples for the presence of CW compounds without compromising proprietary or confidential business information. A prototype instrument is being designed and constructed and will be delivered to DTRA in FY00. Testing will be conducted in a surety laboratory to determine response to CW agent vapors.

7.7.2.4 ON-SITE DETERMINATIVE ANALYSIS

This program area supports the On-Site Analysis Mission Need by developing technologies capable of confirmatory identification for chemical agents during on-site arms control inspections or investigations. The CWC currently recognizes only GC/MS technology in this context. Therefore, efforts are focused on improving all aspects of this technology.

The project in this program area is Analytical Data Software.

Analytical Data Software: Beta testing will be completed on analytical instrument software developed by DTRA performers. Lower bound parameters for sensitivity will be investigated. Spectral database maintenance will be performed. Additional mass spectra will be evaluated as candidate spectra to the OPCW Central Database. Further mechanisms to decrease potential false-positive identifications will be investigated.

7.7.2.5 OPERATIONAL AND ENVIRONMENTAL TESTING

This program area supports all mission needs by supporting field data collection and by evaluating DTRA- sponsored technologies to ensure that they perform as intended in their

operating environments. Within this program area the Requirements Assurance Test and Evaluation (RATE) project protects DoD's credibility by ensuring that technologies are sufficiently robust to achieve performance standards within specific environmental and logistical parameters. This evaluation is conducted prior to technology transfer to the private sector for potential use during CW arms control activities. Proposed inspection equipment and procedures are independently evaluated to ensure that they: 1) meet CWC inspection standards; 2) perform as designed; 3) Survive the rigors of inspections; 4) perform required compliance monitoring tasks safely and efficiently; and 5) meet U.S. performance standards when used for safety monitoring. Additionally, data from the RATE program feeds back into the Technology Integration project where proven technologies are modified in order to integrate them with equipment and procedures currently in use for CWC verification.

Planned FY00 Projects include:

- ANDE
- Mini-PINS
- Auto Air Sampler
- SFE Testing.

7.7.3 EMERGING TECHNOLOGY

The objective for emerging technology projects is to achieve cost effective solutions to future arms control verification requirements. This may be achieved by capitalizing on the core expertise and skills of the national laboratories and other research institutions, thereby leveraging DoD resources. Work under this effort spans all treaty areas. To accomplish this, DTRA may invest five percent of their total arms control technology budget, each year, to investigate promising technology.

Projects for FY00 are:

- Stabilization of Biosensors
- Chemical Agent Microsensor

Stabilization of Biosensors: This is an 18-month duration project conducted at the University of Pittsburgh, Department of Chemical Engineering, to study and develop stabilized enzyme-polymer systems as sensitive, simple, and robust sensors of chemical nerve agents. Enzyme-polymer films will be developed that contain organo-phosphorous (OP) anhydrolase, phosphotriesterase and acetylcholinesterase. These enzymes have a range of specificity for nerve agents and produce protons as byproducts of their reaction with nerve agent. This chemical reaction is used to detect changes in pH. The proof of concept has been demonstrated and work is continuing to optimize the enzyme detection chemistry. This effort leverages research funded by DOE, Army Research Office (ARO), National Science Foundation (NSF), and the U.S. Environmental Protection Agency.

Chemical Agent Microsensor: The Chemical Agent Microsensor relies on recent technological advances in surface chemistry, thin-film electronics, micro-fabrication, micro-electrical mechanical systems (MEMS), and pattern recognition. National Institute of Standards and Technology (NIST) has been actively developing a gas and vapor microsensor array technology for chemical detection purposes. The sensors use sensitive chemical oxide films that undergo measurable changes in electrical conductivity when exposed to specific chemical compounds in the gaseous phase. Based on initial proof of microsenors. The work is being conducted in the Chemical Science and Technology Laboratory (CSTL) at NIST, and involves collaboration with the Electronics and Electrical Engineering Laboratory (CSTL) at NIST, and involves collaboration with the Electronics and Electrical Engineering Laboratory (EEEL) at NIST.

SECTION 8

DoD PROGRAM SUPPORTING BIOLOGICAL WEAPONS ARMS CONTROL

8.1 OVERVIEW

This section reflects the FY 2000 - 2001 program plan for support of biological weapons arms control.

8.2 ARMS LIMITATIONS IN CONNECTION WITH BIOLOGICAL ARMS CONTROL AGREEMENTS

This program is currently supporting the Biological Weapons Convention (agreement details are provided in Appendix B).

BWC activities could impact the biological weapons arms control program include:

- Currently the only BWC enforcement mechanism is through Article VI of the Convention with no verification and/or transparency protocol. Negotiations in Geneva to draft a legally-binding BWC Protocol have intensified since January 1998 when President Clinton called for strengthening the Convention by developing a “strong BWC protocol” that would include declarations, visits, and investigations.
- Negotiations to draft a BWC Protocol are being conducted by States Parties to the Convention participating in an Ad Hoc Group commissioned by the 1994 Special Conference of States Parties. Projected requirements include:
 - Negotiation of a legally binding Protocol to the BWC that creates a transparency regime which will strengthen the BWC and enhance compliance. This process is ongoing during BWC Ad Hoc Group sessions. The Ad Hoc Group meets routinely throughout the year.
 - Development of Protocol requirements for mandatory data declarations, non-challenge visits, and challenge investigations of alleged use and suspicious outbreaks or disease.

8.3 BIOLOGICAL ARMS CONTROL PROGRAM GUIDANCE

DoD objectives of the Biological Arms Control Program are:

- Provide technical expertise and assistance to DoD negotiators developing measures to strengthen the BWC.

- Conduct technical assessments and impact analysis of proposed Protocol procedures to strengthen the BWC.
- Prepare for prospective declarations and visit exchanges under the BWC Protocol.
- Prepare DoD's annual submission of BWC Confidence Building Measure (CBM) Declarations.

8.4 BIOLOGICAL ARMS CONTROL PLANNING ASSUMPTIONS

See Appendix C.

8.5 OPERATIONS AND MAINTENANCE PROGRAM

8.5.1 INTRODUCTION

Operations and Maintenance funding provides the capability to implement treaty provisions on a sustained basis throughout the program period. Funding must ensure a capability for the DoD to fully comply with current agreements.

8.5.2 O&M SUPPORTING BIOLOGICAL ARMS CONTROL

8.5.2.1 DTRA

In FY99, DTRA continued planning for potential Biological Weapons on-site activities, and participated in interagency working groups addressing BW issues. DTRA continues to participate in training/mock exercises and seminars to ensure readiness of U.S. forces and facilities to comply with relevant agreements. The DTRA is the DoD Executive Agent for the DTIRP, which provides security countermeasure support to all USG facilities inspectable under all arms control treaties and agreements. DTRA also provided technical support for formulating DoD BW arms control and negotiations positions.

8.5.2.2 ARMY

The Army will take all actions necessary to implement and ensure compliance with the BWC at all affected CONUS and OCONUS Army installations, facilities, and activities. The planning and preparation include the conduct of site assistance visits and readiness training exercises at all anticipated declared and potentially declared facilities, the development and implementation of visit support plans for all other facilities subject to short notice visits, and the development of capabilities and procedures to support on-site sampling during Challenge investigations. Implementation planning includes historical data searches, facility assessments, and the development and submission of data packages for declared facilities. The Army also

provides technical support for the formulation of USG BW arms control initiatives and responses to foreign proposals, as required.

8.5.2.3 NAVY AND MARINE CORPS

The Navy and Marine Corps are responsible for hosting international visit teams at Navy and Marine Corps facilities in CONUS, and potentially OCONUS. DON planning includes site assistance visits and mock visits to “declared” facilities, and the development and implementation of visit support methodologies for all other facilities subject to short notice visits. The DON provides technical support for the formulation of USG BW arms control initiatives and responses to foreign proposals. Implementation planning includes historical data searches, facility assessments, and the development and submission of data packages for declared facilities to include coordination and assistance to support DoD’s annual BWC Confidence Building Measure (CBM) submission.

8.5.2.4 AIR FORCE

The Air Force is charged with preparations for hosting foreign exchange/visit teams at Air Force facilities and organizations for biological arms control agreements. These include a schedule of mock exercises and seminars to ensure compliance with relevant agreements. The potential for establishment of an on-site activities regime increases the burden of exposure to foreign visits. This will entail both the preparation of additional facilities and a need for additional fiscal resources for the Air Force.

8.6 PROCUREMENT PROGRAM

There are no projects in this program.

8.7 RDT&E PROGRAM DESCRIPTION

DTRA provides OSD Policy with the expertise, information and tools necessary to carry out DoD management and implementation responsibilities of biological weapons (BW) treaties and agreements. DTRA is responsible for providing technical support to OSD for the conduct of arms control negotiations. Technical support is required by OSD and U.S. negotiators prior to and during Review Conferences (RevCons), Ad Hoc meetings of the Biological Weapons Convention (BWC), and U.S./UK/Rf Trilateral negotiations. Specific support includes technical analyses of impacts of alternatives on DoD equities; preparation of DoD input to the U.S. Government’s annual CBM submission to the UN; coordination and execution of national trial visits; quick reaction studies and inquiry. Results of the BWC RevCons and ad hoc meetings will drive future requirements in this area. DTRA continues planning for potential on-site activities under the future protocol, and participates in interagency working groups addressing BW issues.

The DTRA is the DoD Executive Agent for DTIRP, which provides security countermeasures support to all USG facilities inspectable under all arms control treaties and agreements.

- **Policy Support and Analysis** - provide OUSD(P), OUSD(AT&L), and the Joint Staff with expertise, information and tools necessary to assist DoD negotiators in drafting and negotiating DoD/USG positions on chemical and biological related treaties and agreements.
- **On-Site Analysis** - provide technologies for preparing, screening, and analyzing samples at the site of a CWC inspection or potential BWC related visit or investigation.
- **Compliance Support (CW/BW)** - provide DoD the technology and tools required to manage and implement its responsibilities under CW and BW treaties and agreements to include a data and notification management system that satisfies USG treaty/agreement mandated report needs, including the annual USG submission to the United Nations on biodefense programs.

8.7.1 TECHNICAL ASSESSMENTS CATEGORY

8.7.1.1 BW TREATY SUPPORT

This project is intended for Policy Support and Analysis mission area by providing OSD and the Joint Staff with the technical expertise, information, and tools necessary to carry out DoD management and implementation responsibilities for BW treaties and agreements. DTRA is responsible for providing technical support to OSD for the conduct of arms control negotiations. This requires technical analyses and impact studies and technical support in the development of visit guidelines.

8.7.1.2 BWC NEGOTIATING TOOLS

This project will provide OSD with the expertise, information and tools necessary to carry out DoD management and implementation responsibilities for BW treaties and agreements. DTRA is responsible for providing technical support to OSD for the conduct of arms control negotiations.

The following projects are included in this project area:

- Negotiators Database
- U.S. BW History Database
- Agents of Biological Origin Database
- BWC CBM Data Collection

Negotiators Database. This project provides OSD with a database of DoD facilities and DoD contractor facilities that are involved in DoD's biodefense, biomedical research and development projects. Information within the database includes such items as the facility's name and location, as well as a general description of activities performed at the facility. This effort will aid DoD personnel in protecting sensitive defense equities in the negotiations of the BWC Protocol. This database is year 2000 compliant.

U.S. BW History Database. This database provides OSD with information of the former offensive BW program. Additionally, this database will be modified to include a history of the U.S. Bio-defensive program. This effort is essential in responding to queries from those engaged in negotiating the BWC Protocol.

Agents of Biological Origin Database. This database consists of a limited listing of information on known agents of biological origin. The database will include data on agent characteristics, such as preparation methods, weaponization potential, methods of detection, persistence in the environment, and sampling and production features. This effort leverages an Arms Control Intelligence Staff initiative to build a comprehensive BW/CW analyst station. This

effort will support the ongoing negotiations, by providing significant information on key "agents" to DoD personnel preparing for and responding to BWC Protocol negotiations.

BWC CBM Data Collection. This effort will continue to develop the distributed data collection database initiated by the Biological Arms Control Treaty Office (BACTO). This database is a distributed system operating over the internet to collect data from Services and DoD Agencies required for submission as part of the U.S. BWC voluntary CBMs. This database will be improved by making it more user friendly, cross platform usable and accessible to all military services and DoD agencies.

8.7.1.3 BWC PROTOCOL FEASIBILITY

This project provides OSD with the expertise, information and tools necessary to carry out DoD management and implementation responsibilities for BW treaties and agreements. DTRA is responsible for providing technical support to OSD for the conduct of arms control negotiations.

In order to provide effective technical support and the necessary expertise to OSD, both quick-reaction studies and technical assessments are essential in assisting DoD negotiators in developing negotiating positions for the BWC Ad Hoc Group meetings in Geneva.

The following projects are included in this program area:

- BWC Protocol Assessments
- BWC Protocol Vulnerabilities
- BW CBM Technical Analysis

BWC Protocol Assessments: This program area provides the evaluation of various protocols discussed in the ongoing BWC negotiations and also supports projects that assist the DoD and USG in determining U.S. vulnerability given various protocol scenarios. This program also provides OSD technical and analytical capability for confirmatory diagnosis of threat agents in support for examining the ramifications of two potential challenge investigation scenarios: alleged use of biological agents and suspicious disease outbreak. This effort will examine the utility for confirmatory on-site analysis during potential investigations mandated by the future BWC Protocol.

This project also provides OSD with quick-reaction technical support during the negotiations. These efforts will support DoD negotiators during ongoing Ad Hoc Group discussions and negotiations.

BWC Protocol Vulnerabilities: This program area assesses the vulnerability of military biological facilities to on-site determinative analysis during potential visits in the future BWC Protocol. The projects included in this area are: a comparative study of swab sampling

techniques on different surfaces, detection efficiency after decontamination, and efficiency testing of aerosol samplers.

BW CBM Technical Analysis: This project will provide OSD with technical advisors and quick reaction studies supporting the interagency process and DoD representatives in the U.S. Delegation to the BWC Ad Hoc Group.

8.7.1.4 DoD COMPLIANCE ANALYSIS

This project will commence in FY01 and is intended to provide a technical assessment of the impact on DoD assets during implementation of potential BWC Protocol investigation and visit requirements. This support will include tabletop and mock investigations and visits as deemed necessary.

8.7.1.5 COMPLIANCE SUPPORT INFORMATION PROCESSING

This project supports the Compliance Support mission area by developing a series of information management systems and software planning tools. DoD will use these systems and tools respectively in compiling information needed for potential BWC-related declarations and to assist DoD sites in preparing for potential BWC visits and investigations. This program area includes the following projects.

- BW Data Management System Development;
- BW Data Management System IV&V; and
- BW Site Investigation Planning Tool

8.7.2 TECHNOLOGY DEVELOPMENT CATEGORY

8.7.2.1 ON-SITE SCREENING

This project supports the On-Site Analysis mission area by developing methodologies and technologies for rapid on-site screening of biological agents. The project in this program area that supports the objective is Screening Assays. Studies conducted by Screening Assays will define methods and protocols that allow for the qualitative and quantitative analysis of collected microorganisms. Antibody and DNA based assays will be developed and validated to screen for agents of biological origin. These assays will be used to identify targeted organisms when present in a sample using sensitive state-of-the-art technologies. These technologies and methodologies will also protect national security information by identifying only targeted agents and by making it unnecessary to remove samples from the site for analysis.

The following projects are included in this program area:

- Rapid Hand Held Assay
- Genotypic effects of BW Agents

Rapid Hand Held Assay. The objective of this product is to develop inexpensive, rapid assays capable of detecting and quantifying selected BW agents, in field settings, at a sensitivity at or below infectious or physiological threshold. These assays will have the capability of being

conducted by personnel with minimal laboratory training and engineered to detect multiple agents at one time. An Optical Immuno Assay (OIA) developed by Biostar, Inc. as a means to detect Group A Streptococci, the causative agent of Strep Throat, will be adapted for the detection of relevant C/B and environmental antigens using monoclonal and recombinant antibodies that are currently available. The OIA will be modified in order to reduce the number of steps, adapted to DoD relevant C/B agents, modified to enhance its ruggedness, and multiplexed.

Genotypic effects of BW Agents. The objective is to conduct a massively parallel investigation of 500 plus gene products to identify genes in relevant cell types that are modulated by exposure to biological agents of military interest. A growing array of detection methods for chemical and biological agents exists. The currently available assays are primarily antibody and polymerase chain reaction (PCR) based and have variable sensitivities and specificity. The long-term goal is to develop a function based assay that exhibits generic sensitivity to a range of pathogens. The determination of specific biomarkers for biological agent exposure will be enabling for cell-based sensor and diagnostic applications.

8.7.2.2 ON-SITE DETERMINATIVE ANALYSIS

This project supports the On-Site Analysis mission area by developing methodologies and technologies that are capable of on-site identification of BW agents. These technologies and methods may be used during potential BWC-related investigations.

The project within this program area is: PCR Capillary Electrophoresis.

PCR Capillary Electrophoresis Assay. The objective of this project is to develop and validate a PCR/Capillary Electrophoresis Assay to quantify microorganisms based on their inherent DNA sequences. A variant of the Temporal Thermal Gradient Electrophoresis (TTCGE) assay will be developed to analyze fluorescent labeled amplicons by capillary electrophoresis to a “finger print” of selected samples. As capillary electrophoresis is a high precision assay, it is expected the retention time for a given amplicon under a given set of conditions will allow the genus of a microorganism to be determined. This may allow discrimination of the presence of a particular type of organism from the background of others. The objective of this project is the identification of biological agents from any environmental sample.

8.7.2.3 OPERATIONAL AND ENVIRONMENTAL TESTING

This project supports all mission needs by evaluating DTRA sponsored technologies to ensure that they perform as intended in their operating environments. The objective and purpose of this project is as described in paragraph 7.7.2.5. Starting in FY01 DTRA-developed BW arms control technologies and methodologies will be RATE tested.

8.7.2.4 DOD COMPLIANCE TOOLS

Starting in FY00, DTRA will initiate projects intended to support DoD in its preparation for and execution of potential BWC related requirements. This project will develop expert systems that will assist DoD in preparing for and executing potential BWC related visits, and other transparency measures. This project may also assist in training DoD site personnel to receive BWC related on-site activities such as visits and investigations.

SECTION 9

DoD PROGRAM SUPPORTING NUCLEAR TREATIES AND AGREEMENTS

9.1 OVERVIEW

This section is the FY 2000-2001 Program Plan for Nuclear Treaties, including the Comprehensive Nuclear-Test-Ban Treaty (CTBT) and the Additional Protocol to the U.S.-IAEA Safeguards Agreement.

9.2 LIMITATION OF NUCLEAR WEAPONS TECHNOLOGY, INCLUDING THE PROHIBITION OF NUCLEAR WEAPONS TEST EXPLOSIONS

The following treaties address the testing yield of nuclear explosives, the conduct of nuclear test explosions or the proliferation of nuclear explosive technology:

- Limited Test Ban Treaty (LTBT)
 - 124 parties, including all five nuclear weapon states, bans all nuclear explosions in the atmosphere, in outer space, under water, and in any other environment if such explosion causes radioactive debris to be present outside the territorial limits of the testing party,
 - Signed August 5, 1963; EIF October 10, 1963.
- Treaty on the Non-proliferation of Nuclear Weapons (NPT)
 - 187 parties, including all five nuclear weapon states, prohibits the transfer of nuclear weapons technology to NNWS, while encouraging cooperation in peaceful nuclear technology,
 - Signed July 1, 1968; EIF March 5, 1970.
- Threshold Test Ban Treaty (TTBT)
 - Between U.S. and USSR, prohibits underground nuclear weapons test explosions having a yield exceeding 150 KT,
 - Signed July 3, 1974; EIF December 11, 1990
- Peaceful Nuclear Explosions Treaty (PNET)
 - Between U.S. and USSR, place restriction on underground nuclear explosions for peaceful purposes; i.e., any explosion carried out outside the weapons test sites specified under the TTBT;
- Prohibits individual explosions with a yield exceeding 150 KT and group explosions with an aggregate yield exceeding 1.5 MT;
 - Signed May 28, 1976; EIF December 11, 1990
- Comprehensive Nuclear-Test-Ban Treaty (CTBT)

- Prohibits carrying out any nuclear weapon test explosion or any other nuclear explosion, in any environment
- The treaty requires that 44 named countries must join or after three years the UN must convene a Conference of Ratified States before the treaty can enter into force. Only 41 of those have signed the treaty. The three that have not signed are India, Pakistan and North Korea.
- 154 signatories
- IAEA Strengthened Safeguards Systems Protocol (S3P)
 - Signed by the U.S. and IAEA on June 12, 1998. Submission to the Senate for advice and consent to ratify expected in FY 2000.
 - Provides more intrusive access and strengthened monitoring techniques for the IAEA to detect clandestine nuclear activities.
- Fissile Materials Cut-off Treaty (FMCT)
 - Will cut off the production of nuclear-weapons-grade fissile materials.
 - Negotiations in the planning stages, with OSD support currently in the technology policy development area.
 - OUSD(AT&L) Treaty Manager provides technical support to OUSD Policy and interagency group as required.

Since the CTBT bans all nuclear explosions, DOD programs supporting LTBT, TTBT, and PNET have been encompassed by the funded CTBT projects described in this Program Plan and other projects that will be addressed in future budget cycles. The CTBT International Monitoring System, or IMS, is a robust network of 321 monitoring stations, supplemented by analysis and consultation capable of discriminating between nuclear and other events, voluntary confidence-building measures and an on-site inspection regime for verification activities associated with ambiguous events. Further details of the CTBT are provided in Appendix B.

This year, this section has been expanded to include the Fissile Materials Cut-off Treaty (FMCT), which is in the planning stages at the Conference on Disarmament in Geneva. Further details of the FMCT are provided in Appendix B.

9.3 NUCLEAR TREATIES PROGRAM GUIDANCE

In addition to the DoD guidance in Section 2.4 of the program plan, there are other considerations that guide and affect the nuclear treaties program. These include:

- The President on August 11, 1995 issued a list of CTBT Safeguards, which included direction to continue a comprehensive R&D program to improve monitoring capabilities and operations, the maintenance of a stockpile stewardship program, and a requirement for a process to certify the stockpile on an annual basis.

- A DEPSECDEF Memorandum, issued December 1, 1995, designated ATSD(NCB) as the overall DoD Treaty Manager for CTBT and authorized the appointment of a Deputy for Nuclear Treaty Programs (DATSD(NCB/NT)). The DATSD(NCB/NT) was given the authority to coordinate and manage the DoD planning, preparation and execution of the CTBT, NPT, and all nuclear safeguards and fissile material control agreements, to include a comprehensive and integrated R&D program in support of Presidential guidance. The incumbent continues to provide oversight in this regard.
- DoD Directive 5105.62 consolidated nuclear treaty program-related RDT&E into DTRA, under the oversight of the OUSD(AT&L) Treaty Manager. The DoD Directive also states that DTRA will serve as the DoD focal point for implementation of inspection, escort, and monitoring provisions of arms control treaties and other agreements consistent with DoD Directives.

9.4 NUCLEAR TREATIES PLANNING ASSUMPTIONS

See Appendix C for CTBT, FMCT, and IAEA S3P Safeguards planning assumptions.

9.5 OPERATIONS AND MAINTENANCE PROGRAM

9.5.1 DTRA

9.5.1.1 OPERATIONS AND MAINTENANCE OF IMS STATIONS

For seismic facilities, DTRA will continue to operate and maintain the existing remote sensors in accordance with the international agreed requirements and specifications. Data acquisition and communications interface equipment will be installed at eleven auxiliary seismic stations, and other equipment will be installed at some sites.ⁱ

Several infrasound stations will be installed during the course of FY00, and DTRA will take responsibility for the operation and maintenance of these stations in accordance with the internationally agreed requirements and specifications. Specific numbers will be determined based timing and funding available.

The operation and maintenance of the Wake Island hydroacoustic stations will be maintained until such time as it is possible to upgrade the station to bring it into compliance with Treaty requirements.

Five of the radionuclide stations required under the CTBT are currently in place and sending data to the data centers. DTRA will operate and maintain these stations in accordance with the internationally agreed requirements and specifications.

The radionuclide laboratory will develop, in cooperation with the appropriate international bodies, a manual of standard procedures and quality assurance according to ISO standards. The laboratory will also provide for continuing operation of the laboratory, including participation in developmental exercises sponsored by the Preparatory Commission.

9.5.1.2 GCI INTERFACE

DTRA will provide and maintain a direct high bandwidth communications link between the U.S. Global Communications Interface (GCI) system and the Center for Monitoring Research. This link will be operated in real-time to receive all data from U.S. IMS facilities, all data for non-U.S. IMS facilities, and all data products from the IDC. This link will be maintained at the reliability rate required by the Preparatory Commission for receipt of IMS data. This link will support the development of the U.S. CTBT verification systems.

9.5.2 ARMY

The Army has conducted a threat assessment of Army activities that might be impacted by the Enhanced Safeguards Protocol, and determined there is no need to ask for exemptions from the list. Possible support roles for Army elements in the IMS have been discussed, but without resolution at this time. At this point, the Army does not predict significant impact from Enhanced Safeguards, CTBT and any future FMCT agreements.

9.5.3 NAVY AND MARINE CORPS

Uncertainty exists regarding the speed with which nuclear treaty program requirements will develop. Although the requirement exists for Navy participation at working group meetings for CTBT, IAEA/S3P, and FMCT, DON implementation requirements for these emerging treaties is not certain. DON has therefore not provided separate budget line items for nuclear treaties related O&M funds for FY00 and FY01. Resources will be drawn from the "other" arms control treaties category. Personnel, travel, and per diem requirements will be required for analysis, assessments and assistance visits to Navy and Marine Corps facilities. DON expects to undertake tasks such as: CTBT, IAEA/S3P, and FMCT IWG coordination and issue resolution, contribution to a DoD Threat Assessment, participation in IMS equipment location decision making as it affects DON facilities, and development of readiness plans to host nuclear treaty related on-site inspections at Navy and Marine Corps facilities.

9.5.4 AIR FORCE

Activities include further refining the AF CTBT Implementation and Compliance Plan based upon lessons-learned from table-top exercises. The Air Staff produced an after-action report on a CTBT tabletop exercise conducted at Nellis AFB in June 1998 and conducted a follow-on tabletop exercise at Hill AFB in July 1999. Both exercises stressed inter-

organizational dynamics between the base and headquarters level actors while focusing on logistics and managed access issues. Participation from DTRA, NTPO, and other agencies helped make the exercises especially realistic. Lessons learned from these exercises, the first of their kind within DoD, have been forwarded to DoD policy makers to aid in further development of DoD positions concerning CTBT implementation. At the request of the NTPO, the Air Force also briefed lessons-learned to the Ministry of Defense of the United Kingdom to assist their CTBT implementation activities. The format of these exercises will be adapted by DTRA for use in its CTBT Orientation Course.

9.6 PROCUREMENT PROGRAM: NA

9.7 RDT&E PROGRAM DESCRIPTION

Nuclear Treaties RDT&E funds are consolidated in a DTRA program element with prioritization guidance and oversight by the DoD Nuclear Treaty Manager.

9.7.1 COMPREHENSIVE NUCLEAR-TEST-BAN TREATY

Continued implementation of the CTBT is the policy of the Administration as stated by the President, Secretary of State, and SECDEF. The President stated on October 13, 1999 that the U.S. would bring the test ban treaty into force. This statement was further defined by the Secretary of State in an October 15 cable to all diplomatic posts and by the SECDEF at meetings with foreign ministers. Irrespective of the Senate vote on the treaty last fall, the Senate has recently given explicit approval to move forward with the required implementation of the international monitoring system and has released the U.S. dues to the CTBT Preparatory Commission.

9.7.1.1 MONITORING SENSOR SYSTEMS

The planned CTBT IMS, part of the verification regime, will include 321 seismic, hydroacoustic, infrasound and radionuclide monitoring stations required by the CTBT, in order to provide nuclear monitoring data through the International Data Center (IDC) to the States Parties. Thirty-nine of these facilities are located in the United States with DoD responsibility. This project incorporates the planning, development, installation, and, as described in section 9.5.1.1 above, the operation and maintenance of the U.S. IMS facilities.

Many of the facilities required by the treaty do not yet exist, and some types of facilities require further research, development, and engineering to ensure that systems deployed under DTRA direction comply with the internationally agreed requirements and specifications.

For seismic systems, the sensors will be upgraded as needed to comply with CTBT requirements, and data authentication systems will be installed at all seismic sensors. Auxiliary

seismic facilities will be evaluated to determine if the sensors require upgrading to meet PTS certification requirements.

Site surveys will be performed at 3 infrasound sites, and the facilities infrastructure and equipment installation will be performed at two of these sites. At the installation sites, pre-certification tests will be performed, and the PTS certification visits will be supported.

Existing aerosol radionuclide sensor systems (RASA) will be hardened for operational field use. Deficiencies in current RASA hardware which do not meet Provisional Technical Secretariat (PTS) certification requirements will be isolated and re-engineered. The infrastructure for the Charlottesville, Virginia RASA (RN75) will be established, and the equipment for this site will be acquired and installed.

A pre-production test and evaluation on the noble gas radionuclide system (ARSA) will be performed, and evaluated according to PTS requirements and specifications.

Development of a laboratory sample tracking system will be performed at the Environmental Measurements Laboratory. Procedures to take into account different counting geometry at different radionuclide facilities will be developed as well.

A GCI interface system will be developed to route data from the GCI to U.S. users.

Pre-certification mock inspections at U.S. IMS facilities will be performed and the actual PTS certification visits will be supported by DTRA.

9.7.1.2 VERIFICATION SYSTEMS TO SUPPORT NATIONAL MONITORING

The CTBT verification regime has established an International Data Center (IDC) that collects, archives, processes and fuses data contributed by States Parties through a Global Communications Infrastructure (GCI). The DoD developed the prototype IDC, including a software suite and a hardware testbed, and is currently transitioning, in phases, the capabilities to the Preparatory Commission in Vienna, Austria.

A primary consideration for the DoD commitment in the negotiations for developing the prototype IDC was to influence the technology developed as a Treaty requirement for use in the U.S. national data processing of IMS data. As part of this program, technology from the prototype IDC will be integrated in a way to create a system that would incorporate appropriate DoD input for use by the U.S. National Authority to assist in it in the decision making processes regarding Treaty compliance. The National Authority will serve as a gateway between USG decision-makers and the CTBTO in Vienna.

The program will advance the development, integration, and testing of automated processing techniques for handling seismic, hydroacoustic, radionuclide, and infrasound data. The emphasis is on applying methods for improved signal detection, event location, depth/altitude estimation and event identification into proof-of-concept prototype operations, using real data from ongoing international CTBT data exchanges. The program will have a significant scientific impact in its integration of advanced earth, atmospheric and oceanic models, and region-specific signal processing activities within knowledge-based fusion systems. Additionally, the program will stimulate valuable technological achievements on the broad, horizontal integration of advanced computer science technologies from data acquisition, distributed processing over wide-area networks, application of knowledge-based systems technology, large-scale distributed databases, and rapid and convenient graphical user interfaces (GUIs) for data visualization and access.

In FY00, the transition of the prototype IDC to IDC in Vienna, Austria will continue. This continued transition will involve planning, and developing specifications and software documentation, to include the procedures for the reliable operations of the U.S. CTBT IMS stations and the National Data Center (NDC), communications between the stations and the NDC, and appropriate system monitoring. As the prototype IDC nears its final phase of IDC transition, the facilities currently housing the prototype IDC and the developed technology will be available for use by the National Authority to assist in clarifying issues of compliance. Lastly, this prototype has served as a testbed for the development of systems and procedures for the U.S. NDC.

9.7.1.3 U.S. VERIFICATION SYSTEMS

The derived requirements from the CTBT indicate that the U.S. needs to develop and maintain a capability to generate and respond in a timely manner to consultation and clarification as well as on-site inspection requests from the Technical Secretariat and other States parties to the CTBT. The Center for Monitoring Research will prototype these capabilities.

A system to monitor the status and performance of the network of IMS stations and communications links in the U.S. and its territories will be developed. In addition, a capability to monitor the detection by the IMS of events in the U.S. and its territories for possible compliance questions from foreign sources will be developed and prototyped. Reporting architectures will be developed and maintained to provide information with respect to anomalous IMS station performance and measurements, and the analysis of special events.

Other efforts to support an analytical system of support for technical verification of nuclear tests will include a system for routine acquisition of data and products from the international system and collateral sources of information. These data will be integrated into an assets database for nuclear verification analysis.

A research and development testbed to test and evaluate advanced nuclear test monitoring analysis methods and data processing procedures will be implemented and maintained. This testbed will support both classified and unclassified data and analysis methods.

Specifically for radionuclide measurement and analysis, advanced algorithms for radionuclide event identification and spectral detection will be developed to enhance U.S. national radionuclide capabilities, including automated event recognition methods, advanced forensic tools, and the use of neural networks. In addition, advanced methods to correlate radionuclide measurement data with multiple data sources will be developed.

A capability to evaluate the performance of the international monitoring system (including the IDC) will be developed. Systems and procedures in place at the IDC will be monitored to ensure that products resulting from IDC analysis are of the highest possible quality and accuracy. A reporting architecture for these evaluations will be developed.

9.7.1.4 BASIC AND APPLIED RESEARCH AND DEVELOPMENT

This is a congressionally mandated program that must be funded at the established levels for seismic and non-seismic research. Achievement of U.S. objectives for CTBT verification requires global monitoring at thresholds beyond the current U.S. capabilities and capacities. Understanding, processing, and analyzing data from these new, highly sensitive data collection systems, and providing actionable information based on these data and products will require significant basic research and exploratory development in the areas of seismic, hydroacoustic, infrasound, and radionuclide monitoring. The objective is to fill critical technology gaps that prevent the U.S. from achieving its CTBT monitoring goals and continue progress toward enhancing operational monitoring capability at a decreasing cost through improved understanding of phenomenology and development of improved automated and interactive processing and analytical algorithms.

Results from efforts supported by this program will be integrated into the prototype systems at the Center for Monitoring Research (CMR). The results from the operational test and evaluation at the CMR will be propagated to systems in use by the U.S. and internationally as appropriate.

Upcoming Program Research & Development Announcements (PRDAs) will provide support for the development of new efforts in improvements to the seismic discrimination of small events in regions of interest, acquisition of seismic data applicable for event calibration in regions of interest, development and calibration of robust methods of calculating seismic event magnitudes for use in discrimination, development of advanced methods of processing hydroacoustic data for event detection and locations, development of methods for the integration of hydroacoustic and seismic data, development of methods of processing infrasound data and the joint use of seismic and infrasound data for event discrimination, and the investigation of

geophysical properties of the test sites of nuclear weapons states and possible nuclear weapons sites.

In addition, seismic location calibration information for IMS stations in Asia and North Africa will be developed and tested, with the results and documentation provided to the CMR for implementation and testing. Seismic location calibration tests will be carried out in China.

9.7.1.5 ON-SITE ACTIVITIES AND ASSOCIATED MEASURES

The provision for on-site inspections (OSI) under the auspices of the CTBT is a key element of its verification regime. An OSI may be requested of a State Party by another State Party or States Parties when they suspect that it has not complied with the basic obligations of the Treaty. The basis for an OSI request may be IMS data, IDC bulletins, or relevant technical data gathered via national technical means. Though not required by the Treaty, it is expected that the event that has caused concern about possible non-compliance will be addressed first through the consultation and clarification procedures outlined in the treaty. Even though the OSI element is the least developed aspect of the CTBT verification regime, it will have the furthest reaching implications for DoD equities when implemented.

As negotiations in the PrepCom continue, and the details of the OSI regime are developed, U.S. positions, particularly as they pertain to DoD equities, are identified and incorporated. This effort also aims to prepare U.S. decision-makers and affected DoD components for implementing the OSI regime and associated measures (e.g., confidence-building measures). Products include recommendations to the U.S. policy community for our negotiators regarding key elements of the emerging OSI Operational Manual; a comprehensive training program on the full range of on-site inspection activities and associated measures, including table-top exercises, and ultimately mock inspections; and an approved OSI equipment list.

9.7.1.6 READINESS AND TRAINING TO SUPPORT INTERNATIONAL INSPECTIONS OR EXCHANGE VISITS

READINESS: The DTIRP has established, among other things, a capability to help ensure DoD-related facilities are ready for inspections or visits. Upon request, DTIRP personnel will instruct site personnel on security, the conduct of an inspection, and how to interface with inspectors and escorts. The DTIRP conducts inspections of potentially vulnerable sites that are prime candidates for on-site inspections. The DTIRP also draws from conclusions found in facility vulnerability assessment reports.

Training Development: Development of a CTBT Orientation Course with specific programs of instruction to familiarize DoD personnel on Treaty provisions and OSI is ongoing. Future modules will include escort procedures once U.S. implementation plans are finalized.

9.7.2 IAEA STRENGTHENED SAFEGUARDS SYSTEM PROTOCOL (S3P)

For FY00, Strengthened Safeguards RDT&E efforts were directed at identification of DoD equities and programs at potential risk from IAEA inspections, and at the technical assessment of the degree of vulnerability these inspections may pose to DoD equities and national security information. During 1999, DoD completed the assessment of approximately 51 equities at 7 DOE sites. For FY00 DoD plans to complete assessments of DoD equities located at commercial nuclear facilities licensed by the Nuclear Regulatory Commission (NRC).

9.7.2.1 DOD NUCLEAR SAFEGUARDS IMPLEMENTATION WORKING GROUP

The NSIWG is charged with monitoring and coordinating DoD implementation activities relating to nuclear safeguards agreements concluded between the USG and the International Atomic Energy Agency (IAEA). These agreements include, but are not limited to, IAEA INFCIRC 288 and IAEA INFCIRC 540. The NSIWG serves as a tool to assist DoD in coordinating and providing implementation guidance and in overseeing implementation planning and execution. The NSIWG shall develop nuclear safeguards implementation guidance for promulgation by OUSD(AT&L) to enable prompt execution of Secretary of Defense decisions, to identify new implementation issues and to develop recommendations for Secretary of Defense decision on identified implementation issues.

The DoD NSIWG is the major vehicle through which DoD accomplishes its Strengthened Safeguards implementation and oversight responsibilities. The Nuclear Treaty Programs manager or designated representative chairs the NSIWG. The NSIWG and its subgroups provide a forum for coordinating DoD implementation planning and preparations; coordinating and advocating DoD implementation program, budget and resource creation and allocation; and identifying and coordinating resolution of issues prior to and after EIF. The NSIWG monitors status of DoD preparations and circulates information on national implementation initiatives, IAEA procedures, and progress towards EIF. Membership of NSIWG is as identified in its charter and DoD Directive 2060.1.

SECTION 10

DoD PROGRAM SUPPORTING ARMS CONTROL INFORMATION PROCESSING

10.1 OVERVIEW

This section is the FY 2000 - 2001 program plan for Arms Control Information Processing, which includes the information technology RDT&E projects and operation and maintenance of fielded systems supporting the strategic, conventional, chemical, and biological treaty areas.

The Compliance Monitoring and Tracking System (CMTS) is a major ongoing effort that supports U.S. implementation and compliance with the notification and reporting requirements of the following: START and (upon EIF) START II Treaties; INF Treaty; CFE Treaty; OSCE Vienna Document; OSCE GEMI; the UN TIA Initiative; Treaty on Open Skies (OS); CWC; and the Wassenaar Arrangement.

Within CMTS, the START Central Data System (SCDS) supports the START, START II and INF Treaties. The Data Management/Notification System (DMNS) supports the CFE Treaty and Vienna Document. The Data Management and Reporting System (DMRS) supports the UN TIA and OSCE GEMI agreements and the Wassenaar Arrangement. The Open Skies Notification System (OSNS) will support the Treaty on Open Skies. The Chemical Accountability Management Information Network (CAMIN) supports requirements for the CWC.

The Information Processing program is performing an Arms Control Information and Notification (ACIN) Program Cost Benefit Analysis to define acquisition strategies for maximizing the operational effectiveness and minimizing the cost for meeting the IT needs of the Arms Control environment. The Cost Benefit Analysis incorporates the results of the Tools and Information Needs Assessment (TINA), the ACIN System Concept Validation assessment, as well as analysis of the current state environment. The analysis will define a long-term strategy for modernizing existing capabilities, such as those provided by CMTS, to meet evolving user needs and to incorporate new technical capabilities. Where applicable, RDT&E information technology projects have shared development accomplishments to eliminate duplication of effort. For example, the DMRS and the CWC CAMIN are using the architecture developed for the SCDS and DMNS efforts. The Information Processing Program is also currently assessing other areas of arms control to enhance negotiators' capabilities with existing and emerging treaties and agreements.

10.2 DESCRIPTION OF COMPLIANCE MONITORING AND TRACKING SYSTEM

The CMTS provides the overall architectural umbrella under which individual treaty support subsystems have been developed. The individual projects contain the functionality to implement and comply with existing and emerging arms control treaties and agreements. The overall system architecture has been defined, and an initial operational capability has been developed, or planned, for each of the projects. CMTS, as the central host, provides the hardware and software links for the various subsystems. CMTS strategic and conventional subsystems were transitioned to DTRA/Information Systems, the O&M Manager/System Administrators in FY 1997. CAMIN transitioned to the U.S. Army Soldier and Biological Chemical Command (SBCCOM) in the first quarter of FY99. The O&M Manager/System Administrators provide for system operation and maintenance for modernization and required operation and maintenance for new treaty/agreement modules developed by DTRA. The CMTS software operates in a Windows NT environment, features Graphical User Interface (GUI) at user sites, is user-friendly, and includes features permitting access to the various subsystems as well as electronic mail.

10.3 ARMS CONTROL INFORMATION PROCESSING PROGRAM GUIDANCE

This program guidance is based on requirements stemming from internationally negotiated agreements, supplemented by user-defined system requirements necessary to assure USG compliance with those agreements.

- The need for data management RDT&E and assessments will continue beyond treaty/agreement EIF dates. Technical Assessments should consider a broad range of thinking on anticipated future arms control-related reporting needs to include regional needs, non-proliferation initiatives, conventional/dual use technology transfers, ballistic missile technology control, and a possible APL ban. RDT&E data management and assessments will be coordinated with the O&M Manager from initial concept through fielding to facilitate seamless integration and prevent interruption of existing data management systems. Upgrades, enhancements, and modernization efforts to fielded information systems will be pursued by the O&M Manager. However, improved equipment items for existing agreements will be coordinated with other participants before use when such improvements have overarching implications to data management system users and are deemed appropriate by the O&M Manager.
- Expand data management and notification capabilities and use of technical assessments to the maximum possible within current budgetary constraints.
- Give high priority to providing technical support for USG delegations engaged in treaty negotiations that potentially affect established data management system accounting rules and reporting methodologies.

- Provide necessary technical assessments on interface requirements and impact analysis for operational data management systems.
- Ensure effective and efficient improvements to and expansion of data management capabilities.
- Ensure data integrity is maintained and reporting algorithms are accurate and verifiable.
- Improve the effectiveness of the CFE/VD99 supporting information systems.
- Address the needs of an adapted CFE Treaty.
- Focus on increasing capability for cross-agreement analysis.
- Improve system capability and effectiveness through architectural upgrade.
- Develop the capability, if directed, to accommodate data management and notification requirements in anticipation of future information exchanges in a post-START II regime.
- Develop the capability, if directed, to accommodate data management and notification requirements for TIA and GEMI provisions.
- Develop the capability, if directed, to accommodate conformity with an adapted CFE Treaty.
- Develop the capability, if directed, to accommodate conformity with new Vienna Document CSBMs.
- Modify OSNS, as directed, to ensure conformity with evolving OS Treaty provisions.
- Assess requirements for BWC data and notification management.
- Assess requirements for ABM/TMD information management system.
- Develop the capability, if directed, to accommodate data management and notification requirements for the BWC.

10.4 ARMS CONTROL INFORMATION PROCESSING PLANNING ASSUMPTIONS

See Appendix C.

10.5 OPERATIONS AND MAINTENANCE PROGRAM

10.5.1 INTRODUCTION

Once the CMTS prototype information systems are fully developed, they will be turned over to a permanent O&M Manager/System Administrator for continued organizational operation and maintenance. The DTRA is responsible for the strategic and conventional subsystems and the U.S. Army (SBCCOM) for the chemical subsystem. DoD organizations with arms control implementing responsibilities will provide the basic data to support the information systems, and will initiate the notifications required by the various arms control treaties and agreements.

10.5.2 DTRA

10.5.2.1 O&M SUPPORTING COMPLIANCE MONITORING AND TRACKING SYSTEM

DTRA is the O&M Manager/System Administrator for the fielded DoD DMNS and SCDS systems. DTRA O&M provides automation support to ensure timely, accurate, and consistent reporting in accordance with treaty/agreement responsibilities. DTRA provides configuration management, logistics support, problem resolution, system integration, and functionality enhancements to the operational baseline of CMTS and related systems.

Configuration management consists of managing the fielded baseline to ensure that DoD requirements are consistently implemented and fielded to meet operational treaty reporting and accountability guidelines. The ability to trace requirements to system function is crucial to ensuring that the functionality and operation of CMTS is consistent with treaty/agreement provisions and that the integrity of DoD data is not compromised.

Logistics support consists of a disciplined, unified approach to ensure that design and development, testing, fielding, support, and system enhancements are cost effective and can be achieved with minimum support infrastructure. Infrastructure support required to sustain a full operational status of CMTS at the National Treaty Support System (NTSS), located at DTRA; START Reporting System (STARS), located at HQ ACC; and DoD and service components is and will continue to be carefully reviewed. Assessments and evaluations will continue through the life of the program to ensure CMTS operates without failure/degradation and is maintainable using prescribed procedures and resources.

Functionality enhancements, to ensure conformity with changing treaty/agreement provisions and emerging technologies, are paramount in ensuring continued and future usage of CMTS subsystems and infrastructure. A priority for the FY00/01 time period will be enhancements/modifications needed to address changes resulting from an adapted CFE Treaty.

The need for data management O&M and assessments will continue through treaty/agreement periods. The requirement is to provide technical support to all negotiations, or to post-negotiation consultative commissions, review conferences or similar entities in matters relating to the development of supporting data systems, improvements to the systems, transmittal of required notifications, or the provision of technical data. Individual projects provide technical support on information processing to USG negotiating teams for CFE, START, START II, Open Skies, OSCE, FSC, NATO, Vienna Declaration, and any future negotiating fora during negotiations and in associated post-negotiation consultative commissions, review conferences or similar entities. Assessments will consider a broad range of thinking on anticipated arms control related reporting needs. Tasks are on an as-needed basis within an indefinite period and specific timelines are defined for the individual tasks.

The following projects currently address specific mission needs and requirements:

Software Enhancements - This project accommodates system modifications required by treaty/user organizations, noted inconsistencies during testing, and efforts to baseline the START Central Data System (SCDS), Data Management and Notification System (DMNS), the Data Management and Reporting System (DMRS) and START Tracking and Reporting System (STARS).

System Modernization - This project provides for an evolving infrastructure, which emphasizes interoperability, efficiency, and end-to-end user services. This project capitalizes to the greatest extent possible on information transfer, information and data storage, manipulation, retrieval, and display. This project focuses connectivity and interchange of information among information resources at the network, application, presentation, and data levels as required without special connections, procedures, or other intermediate translation and gateway devices.

CFE/CSBM/Open Skies NOFES - This project is implementing the Notification Front End System (NOFES) under development by the Dutch and Hungarian governments for the Open Skies, CFE/CSBM treaties, respectively. This project is ongoing and addresses new developmental efforts on the part of the OSCE Communications Group.

Integrated Notification Application - This project will provide an integrated solution to replace the existing CFE and OS NoFES, and CSBM macro applications/systems. The new application will allow the OSCE participating states to exchange arms control message traffic, utilizing one user interface and requiring maintenance for one application, versus three.

OSCE Communications Network Upgrade - An international team led by DTRA manages this project. The project, commenced in August 1998, is implementing an upgrade to the current OSCE communications network, using a two phased approach. The network upgrade (Phase I) will be utilized to take advantage of the Microsoft NT Server and Exchange 4.0 Mail Server capabilities, to be installed on new servers and End User Stations (EUS). The procurement and implementation efforts for Phase I took place during February-July 1999 and cut over to the new network occurred on July 20, 1999. This phase addressed Y2K problems and provides much needed network expansion capabilities for the future. Phase II upgrades (currently in an analysis phase) have not yet been scheduled or approved by the OSCE members. The Phase II upgrade will ensure state-of-the-art use of Internet connectivity and implement security measures.

DMRS Enhancements - This project is updating the DMRS, which supports the TIA/GEMI requirements, and incorporating this system as a module in CMTS. Enhancements to satisfy implementation and fielding of required DMRS updates to TIA/GEMI requirements are ongoing.

Host Server Upgrade - To meet increasing demand on the CMTS, including expansion for future needs, and staying with the enhancement of technology to maintain vendor support, this project is providing a CMTS central server upgrade and will establish a redundant processing capability. Host server upgrades will commence in FY00 and are projected to be completed in FY01 consistent with established Life Cycle Management (LCM) procedures. Life cycle replacements will be consistent with the recommendations of the proof-of-concept.

User Workstation Upgrade - This project is standardizing CMTS fielded workstations at an equivalent level to those currently supported by DTRA to ensure more efficient O&M support and provide adequate server and personal computer capabilities for potential future expansion. This project will commence in FY00 and is projected to be completed in FY01 consistent with established LCM procedures.

New Communications Standards - New communications standards are being implemented to improve system reliability and control for CMTS. This project will address emerging communications standards in the DoD and commercial industry. Initial implementation and fielding commenced in FY98 and is proceeding in tandem with established DISA implementation plans.

Independent Testing and Evaluation - The focus of this project is to provide a comprehensive evaluation throughout the incorporation of system modifications to help ensure that errors are detected and corrected. Project risk, cost, and schedule effects are thereby limited. The resulting independent testing will yield enhanced software quality and reliability. Management visibility into the system modification/enhancement process is amplified and consequences of proposed changes can be quickly assessed. Functional and operational test plans will be developed and provided for review to developers and users. After the tests are executed, an evaluation document will be developed to detail system problems or inconsistencies encountered during testing and determine if the system meets the functional requirements and design specifications before deployment into the field. This project will be required as existing systems are modified and new systems are developed. Customers include OSD, the Joint Staff, CINCs, the Services, and DTRA.

Open Skies System Enhancements - This project focuses on pre-flight mission and planning and post-flight analysis of Open Skies missions. A block of software upgrades (6.0) was completed, tested, and installed during FY99. A significant number

of user-identified problems were also identified and resolved. Portable UNIX hardware and GPS units were acquired to improve the performance of existing systems. Project personnel continue to anticipate and remain prepared for the treaty's EIF.

10.5.2.2 O&M SUPPORTING OPEN SKIES MANAGEMENT AND PLANNING SYSTEM

OSMAPS is a UNIX-based system that provides automated mission and sensor planning and post-mission analysis support for Open Skies missions. OSMAPS includes four subsystems that use a common software architecture to manage different planning and mission activities associated with the OS Treaty. These subsystems are the Active Overflight System (AOS), Operational Planning System (OPS), Passive Overflight Module (POM), and Transportable Operational Planning System (TOPS). In addition, OSMAPS interfaces with the Telephone Notification System (TNS), the Open Skies Annotation, Tracking, and Plotting System (OSATAPS), and the Data Annotation, Recording, and Mapping System (DARMS).

OSMAPS transitioned to O&M management during FY99. O&M objectives for FY00 are: 1) Provide O&M software and hardware support; 2) Test and implement Block 7.0 software; 3) Test and implement Block 7.0 software; 4) Develop and validate next generation (COTS application) TNS requirements; 5) Assist DTRA/OST in development and validation of next generation OSMAPS requirements; 6) Establish Data Preparation Facility at DTRA; 7) Coordinate/Facilitate move of OSMAPS equipment to Ft. Belvoir; 8) Assume chairmanship of and conduct Configuration Control Board meetings; and 9) Develop and implement a network for OSMAPS systems.

10.5.2.3 O&M SUPPORTING ORGANIZATION FOR SECURITY AND COOPERATION IN EUROPE (OSCE)

DTRA will:

- Continue to provide the U.S. technical representation to the OSCE CG CCB;
- Continue to lead the OSCE Communications Network Upgrade; and
- Promote the design and development of the Integrated Notification Application.

10.5.3 ARMY

The Army is responsible for providing data in support of treaty/agreement reporting requirements. Reporting requirements include the GEMI, UN TIA, and Wassenaar Arrangement measures. The Army's SBCCOM is the system administrator for the CAMIN system. The Army will also be responsible for a future data reporting requirement and possible database development effort for the Anti-Personnel Landmine Initiative, and the revised Convention on Conventional Weapons.

10.5.4 NAVY AND MARINE CORPS

The Navy and Marine Corps are responsible for providing data in support of treaty/agreement reporting requirements. Reporting requirements include the GEMI and UN TIA measures. DON arms control information processing O&M funds are contained within the funding lines identified by treaty name. DON efforts include: the Treaty Information Management System, Treaty Library System, the DON Arms Control Treaty Program internet home page, a DON Arms Control Treaty Program intranet system, and data base systems for internal DON coordination, collation, and report generation for GEMI, TIA and the Wassenaar Arrangement.

10.5.5 AIR FORCE

The Air Force is responsible for providing data in support of treaty/agreement reporting requirements. Reporting requirements include START (through STARS), GEMI, the UN TIA measures and the Wassenaar Arrangement and voluntary data submissions under the present BWC.

10.6 PROCUREMENT PROGRAM: NA

10.7 RDT&E PROGRAM DESCRIPTION

The information processing projects have been designed to ensure that the RDT&E prototype products support the USG obligation to implement, and comply with, the reporting requirements of existing and emerging arms control treaties and agreements. The data reported through these systems becomes the basis for compliance monitoring by the various participating states. The information systems provide additional support to the DoD organizations with implementing responsibilities by minimizing the impact of Arms Control reporting requirements on military operational channels.

Arms Control Information Processing RDT&E Projects that are pursued in the FY00 - FY01 Program are described below.

10.7.1 TECHNICAL ASSESSMENT CATEGORY

This category contains RDT&E projects that assess the technical efforts required to fulfill information processing and data management requirements for new treaties/agreements. It also includes the applicability of software tools for enhancing treaty implementation and compliance to realize gains in accuracy and consistency while achieving manpower and cost savings.

10.7.1.1 ARMS CONTROL INFORMATION AND NOTIFICATION (ACIN) PROGRAM COST BENEFIT ANALYSIS

The requirement is to incorporate the results of a current state analysis, the results of the Tools and Information Needs Assessment (TINA), and results of the ACINS-CV projects into a Cost Benefits Analysis for defining future Arms Control Information and Notification Program Information System goals, objectives, and acquisition strategies for cost effectively meeting the Information Technology (IT) needs of the Arms Control environment. The Cost Benefit Analysis will take into consideration the limitations in the current environment, the needed changes to provide management flexibility in the IT program, as well as changes in both the available technological solutions and the evolving needs of the Arms Control community. The results of the analysis will impose a strategic plan on the ACIN program activities, which will affect the tools and systems that support the following customers of arms control information: OSD, the Joint Staff, DTRA, the Services and the Combatant Commands.

10.7.1.2 NEGOTIATION SUPPORT FOR INFORMATION PROCESSING FORA

The requirement is to provide technical support to all negotiations, or to post-negotiation consultative commissions or review conferences, in matters relating to the development of supporting data systems, improvements to the systems, transmittal of required notifications, or the provision of technical data. The provision of this type of technical support can take the form of: 1) technical/technological analyses and briefings to analyze the validity and accuracy of proposed decisions and measures; 2) technical implementation assessments to outline approaches to implementing a proposed decision; 3) impact assessments on implementing decisions/issues; 4) investment assessments to determine the impact a proposed decision might have on DoD technology investment; 5) the provision of data to the U.S./DoD delegations; and 6) direct technical support to subordinate working groups.

This support will begin in FY00. The customers for this action are OSD, JS and DTRA.

10.7.1.3 START III ASSESSMENT

This project will begin in FY00 and will analyze the evolving START III requirements, and potentially applicable technologies, to support the earliest definition of IT required facilities for supporting START III needs. DoD and DOE are jointly assessing recently-developed remote monitoring and sensing technologies for their applicability to the anticipated START III requirements. Users include OUSD(P), OUSD(AT&L), DOE, JS, Defense Agencies and Services.

10.7.1.4 ARMS CONTROL INFORMATION AND NOTIFICATION SYSTEM PROOF-OF-CONCEPT/CONCEPT FORMULATION

This assessment will develop a standard for future development of state of the art technologies for arms control information processing systems designed to support treaty compliance. The defined architecture will be flexible to provide access to arms control information. The intent is to support domain-oriented (potentially regime-oriented) plug and play modules of related functionality within a common infrastructure, and will be as compatible as possible with existing treaty compliance systems. Experimentation of the system architecture will be required, with full documentation.

Proof-of-concept demonstrations will be performed to validate that existing treaty/agreement requirement system capabilities can be captured in a potential new architecture and a concept formulation demonstration will be performed to outline development of new treaty compliance capabilities. It is anticipated that future development projects will be more economical, based on the flexibility of the defined architecture. A cost-benefit analysis will be conducted prior to actual software development.

The results of this assessment will be beneficial to the treaty compliance community by providing suggested improvements to existing systems and architecture for all future information processing development efforts. This assessment will be completed in the second quarter of FY00, and the results will be factored into alternative analyses for future ACIN Program acquisition strategies. The following are customers for this action: OSD, the Joint Staff, DTRA, the Services and the Combatant Commands.

10.7.1.5 INTEGRATED NOTIFICATION APPLICATION (INA)

The INA will provide OSCE States with an automated capability to process notifications in accordance with the information exchange provisions of the following three Conventional Arms Control (CAC) treaties and agreements:

- Conventional Armed Forces in Europe (CFE) Treaty as modified by the Agreement on Adaptation;
- VD99; and
- Open Skies (OS) Treaty.

INA, sponsored by OUSD(AT&L), is being acquired by the DTRA, and will be developed as an application to be installed on equipment in each of the OSCE participating states. The project is a FY00 and FY01 activity.

10.7.1.6 PRE-LAUNCH NOTIFICATION SYSTEMS (PLNS)

The requirement is to develop the Pre-Launch Notification System (PLNS), a multilateral reporting system for notifying launch information regarding ballistic missile and space launch vehicles worldwide. The PLNS will support the Pre-Launch Notification Regime (PLNR), a key element of the Shared Early Warning initiative. This project will consist of

negotiation support, an assessment of requirements described in the Memorandum of Agreement Pre-Launch Notification Technical Addendum Annex A, and system development.

PLNS will support several distributed clients and allow multinational users to post launch notifications in their native languages. In addition, the PLNS will automatically generate pending launch alerts and respond to user queries for launch information. Initial deployment will be at the Center for Y2K Strategic Stability being established in Colorado Springs by USSPACECOM.

Initial operational capability is scheduled in FY00 with final deployment to a location determined by negotiation, assumed in 2QFY00. Customers include the OUSD, JS, Russian Federation and the services.

10.7.1.7 ABM/TMD INFORMATION SYSTEM ASSESSMENT

The ABM/TMD assessment will determine data and system requirements necessary for development of an automated system module for compliance monitoring to support the USG under the ABM/TMD agreement. The assessment will cover the identification and evaluation of organizational and user needs formulation of functional and operational requirements, and validation and documentation of requirements.

The assessment will provide the information necessary for the initiation of system module development to support the ABM/TMD agreement. The users of the resulting ABM/TMD data management system are OUSD(P), OUSD(AT&L), and JS. The operators of the system module are the Services and DTRA.

10.7.2 TECHNOLOGY DEVELOPMENT CATEGORY

This category contains the RDT&E activities to ensure timely, accurate, and controlled reporting of treaty/agreement responsibilities. The other major elements of this technology development are activities that incorporate new requirements into the CMTS and achieve enhancement of implementation and compliance processes and procedures.

10.7.2.1 ANTI-BALLISTIC MISSILE /THEATER MISSILE DEFENSE INFORMATION TECHNOLOGY SYSTEM MODULE (ABM/TMDITS)

The need is to develop an information processing capability that addresses data requirements generated by the Confidence-Building Measures Agreement (CBMA) of September 26, 1997. The ABM/TMD CBMs were defined by the Agreement on Confidence-Building Measures Related to Systems to Counter Ballistic Missiles Other than Strategic Ballistic Missiles, signed on September 26, 1997 by the United States, Belarus, Kazakhstan, the Russian Federation and Ukraine.

The project addresses system functions, approval hierarchy, notification formats, dual accounting processes, data storage and retrieval requirements, communications and processing constraints. A testing regime will be developed and exercised in concert with software development.

The product is an information management capability that provides automated support to ensure timely, accurate and controlled reporting of data and notifications required by the ABM/TMD CBMA. The product will generate reports at the implementing level; analyze reports for accuracy and completeness at intermediate command levels; ensure consistency of the data with similar reports at the DoD level; archive the data; and develop interfaces where needed between the systems of DoD components. Full operational capability includes development, test and evaluation, operator and maintenance training, program definition with manuals, and system maintenance.

10.7.2.2 IMPROVED COMPUTER ASSISTED THEATER SITE/EQUIPMENT IDENTITY SOFTWARE MODULE

The need is to complete development of an information processing capability, compatible with current arms control systems and flexible for compatibility with the future architecture. This effort will satisfy an OSD requirement to design and develop the improved Computer Assisted Theater Site/Equipment Identity Software Module to improve the capability of the USG to comply with the provisions of the CFE Treaty and the Vienna Document. This automated site identification capability will facilitate treaty notification processes and will serve as the first iteration in a stepped program to improve the display, mapping and notification system. Initially, this product is a stand-alone application that provides display and mapping capabilities to improve awareness of sites susceptible to inspection. The application will be integrated with future versions of CMTS and for any replacement to provide an interactive data update.

Users include OSD, the Joint Staff, the Services, the Combatant Commands, and DTRA. Project completion is set for FY00.

10.7.2.3 COMPLIANCE MONITORING AND TRACKING SYSTEM (CMTS) MODERNIZATION

The requirement is to design and develop, during fiscal years 2000 and 2001, the Conventional elements of the next generation of treaty support systems in accordance with the strategies defined by the ACIN Cost Benefit Analysis. The Conventional element will be followed by Strategic, and then other regimes as required. This will be accomplished employing modern DoD approved system engineering and quality management standards and techniques to facilitate an overall lower life cycle cost model.

This project provides an essential re-engineering of the existing arms control data and information management capability. This new capability will allow the USG to meet rapidly increasing obligations for reports and notifications required by treaties and agreements with state-of-the-art equipment and software, that is both upgradeable and economical to operate.

Based on cost and operational effectiveness assessments of contemplated changes, and fiscal constraints, the product could be an entirely new architecture or consist of strategically staged replacements, modifications, and/or enhancements to the existing IT capabilities. The resulting system implementation will aim toward a flexible targeted information technology architecture to meet the needs of existing and evolving arms control regimes, while prioritizing modernization efforts. Customers for this effort are OSD, DTRA, the CINCs, the Nuclear Risk Reduction Center, the Joint Staff and the Services.

10.7.2.4 VERITY SEARCH SYSTEM MODULE DEVELOPMENT

This project will support the development of a system module that defines CFE signatory nation sites and assets within an area of inspection to increase awareness of international sites susceptible to inspection within CFE and VD99 parameters. The system module will require a graphical mapping capability and data management display. System module development will be based on maximizing use of existing capabilities. System module testing and evaluation, and full documentation will be required.

This task will be initiated and completed in FY01.

The potential customers for this effort are OSD, DTRA, NATO, and the Joint Staff.

10.7.2.5 INDEPENDENT VERIFICATION AND VALIDATION (IV&V)

The requirement is to verify proper definition and implementation of changes to the treaty compliance information processing capabilities and new development efforts. The resulting system changes should satisfy USG obligations for data exchanges and notifications under applicable arms control treaties and agreements. This project will provide independent analysis, verification, and validation efforts, including testing of all development products to verify proper implementation of developments and enhancements.

The focus of this project is to provide a comprehensive evaluation throughout the engineering and implementation of system module modifications to help ensure detection and correction of errors. Project risk, cost, and schedule effects are thereby limited. The resulting IV&V will yield enhanced system quality and reliability. Management visibility into the system development process is amplified and consequences of proposed changes can be quickly assessed. Appropriate test plans will be developed, reviewed by developers and users and executed to ensure that products operate as planned. After execution of the tests, an evaluation report will be developed to detail system problems or inconsistencies encountered during testing and to determine if the system meets the functional requirements and design specifications before deployment into the field. This project will be required as modifications to existing systems and new capabilities are developed. Customers include OSD, the Joint Staff, CINCs, the Services, and DTRA.

10.7.2.6 ARMS CONTROL SITE INSPECTION PLANNING TOOL(S)

This potential project, derived from the TINA effort, will result in additional capability, implemented consistent with the program vision, to provide Arms Control Site Inspection Planning Tool(s) for DoD use in planning and executing potential BWC, CWC, CFE, and Strategic Treaty mandated site inspection/investigations.

The capability will provide access to an Integrated Arms Control Treaty Database(s) that stores all the requisite data to support ad hoc or specialty queries for routine short notice inspections, and special access visits including challenge inspections. A listing of existing assets found at defined coordinates (based on either location name or map location -geographic coordinates) will be provided. In addition, there will be a "lessons learned" feature:

1. providing general information to identify the declared facility,
2. providing name of ownership of the facility,
3. type of ownership (defense, other government, non-government, other), name of the facility operator (POC information),
4. type of operator (defense, other government, non-government, other),
5. inspecting party information (identification, etc),
6. related results from any previous inspections, and
7. any applicable amplifying narrative comments.

The developed tool(s) will provide DoD with the automated capability to ensure U.S. compliance while protecting national interest and sensitive information. The inspection tools will improve performance, readiness and provide for less risk during U.S. inspection procedures under the various arms control treaties and agreements.

10.7.2.7 MULTIMEDIA TRAINING TOOL

This project satisfies the need for an easily employed and generally effective training curriculum for Arms Control system users and operators of OSD, Joint Staff, DTRA, Defense Agencies, and the Services. The development and implementation of multimedia training could provide an automated tool as a fundamental component for the successful training of users at DoD commands and agencies. Initial efforts are focused on providing a demonstration module for CWC. Module development must be sufficiently robust to accommodate additional training modules for future arms control treaties and agreement.

The training module will consist of CD-based training tools using appropriate combination of graphics, audio, video display, and software available through COTS. The training CDs will provide future training capability for end users via desktop within their respective field offices. A multimedia, CD ROM computer-based training curriculum concentrating on the functions and procedures necessary to use the system effectively will be useful for both introductory and on-going training.

10.7.2.8 BW DATA MANAGEMENT SYSTEM MODULE

This project supports the requirement to provide a data management system module that satisfies USG treaty/agreement mandated reporting needs. This project will develop an automated data management system module to assist DoD with managing, submitting and archiving annual declarations under the BWC. This system module will provide access to BW reference material and process any other data requirements resulting from ongoing *Ad Hoc* Working Group meetings and the next BWC Review Conference in 2001.

This effort will initiate in FY00. The customers are OSD, the Joint Staff, Services and other Defense Agencies.

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APPENDIX A**LIST OF ACRONYMS**

ABM	Anti-Ballistic Missile
ABO	Agents of Biological Origins
ACDA	Arms Control and Disarmament Agency (merged with DOS 1 April 1999)
ACI&C	Arms Control Implementation and Compliance
ACINS	Arms Control Information and Notification System
ACIS	Arms Control Intelligence Staff
ACTD	Advanced Concept Technology Demonstration
ACWA	Assembled Chemical Weapons Assessment
AFB	Air Force Base
AFPL	Air Force Phillips Lab
ALA	Agreement-limited Armaments
ALE	Agreement-limited equipment
AMC	Army Materiel Command
AMCOM	Army Aviation and Missile Command
AMDIS	Automated Chemical Identification Software
ANDE	Advanced Non-Destructive Evaluation
ANL	Argonne National Lab
AO	Aerial Observation
AOS	Active Overflight System
APL	Anti-Personnel Landmine
APM	Anti-Personnel Mine
ARF	ASEAN Regional Forum
ARS	Acoustic Resonance Spectroscopy
ASE	Accelerated Solvent Extractor
ASEAN	Association of South East Asian Nations
ASG	Area Support Group
ATMS	Authenticated Tracking and Monitoring System
ATSD(NCB)	Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs
ATTU	Atlantic to the Urals
BAT	Base Assistance Team
BACTO	Biological Arms Control Treaty Office
BDA	Bilateral Destruction and Non-Production Agreement
BIC	Bilateral Implementation Commission
BIIF	Basic Image Interchange Format
BMDO	Ballistic Missile Defense Organization

BW	Biological Weapons
BWC	Biological Weapons Convention
CAC	Conventional Arms Control
CAMDS	Chemical Agent Disposal System
CAMIN	Chemical Accountability Management Information Network
CBI	Confidential Business Information
CBIAC	Chemical and Biological Defense Information Analysis Center
CBM	Confidence-Building Measure
CBMA	ABM/TMD Demarcation Confidence-Building Measures Agreement
CCB	Configuration Control Board
CCW	Convention on Certain Conventional Weapons
CD	Conference on Disarmament
CEG-A	Combat Equipment Group - Asia
CFE	Conventional Armed Forces in Europe
CG	Communications Group (OSCE)
CI	Chemical Ionization
CIE	Capillary Ion Electrophoresis
CINC	Commander-in-Chief
CMTS	Compliance Monitoring and Tracking System
CNWDI	Critical nuclear weapon design information
CONUS	Continental United States
CorE	Conversion or Elimination
COTS	Commercial Off-the-Shelf
CPP	Cooperation Partnership Program
CRG	Compliance Review Group
CSBM	Confidence-and Security-Building Measure
CSTL	Chemical Science Technology Laboratory
CTBT	Comprehensive Nuclear Test Ban Treaty
CTBTO	CTBT Organization
CTR	Cooperative Threat Reduction
CVAM	Continuous Vapor/Aerosol Monitor
CW	Chemical Weapons
CWC	Chemical Weapons Convention
CWDF	Chemical Weapons Destruction Facility
CWPF	Chemical Weapons Production Facility
CY	Calendar Year
CZE	Capillary zone electrophoresis
DARMS	Data Annotation Reporting and Mapping System
DARRS	Data Acquisition Reduction Retrieval System
DCRSi	Digital Cassette Recording System - Integrated

DEPSECDEF	Deputy Secretary of Defense
DIA	Defense Intelligence Agency
DISA	Defense Information Systems Agency
DMNS	Data Management/Notification System
DMRS	Data Management and Reporting System
DNA	Defense Nuclear Agency (renamed DSWA; see DTRA)
DOC	Department of Commerce
DoD	Department of Defense
DOE	Department of Energy
DON	Department of the Navy
DOS	U. S. Department of State
DPG	Dugway Proving Ground
DPSS	Designated Permanent Storage Site
DRI	Defense Reform Initiative
DSWA	Defense Special Weapons Agency (one of three SOAs incorporated into DTRA)
DTIRP	Defense Treaty Inspection Readiness Program
DTRA	Defense Threat Reduction Agency
EI	Electronic Impact
EIF	Entry Into Force
EPA	Environmental Protection Agency
FITGA	Flow Injection Trace Gas Analysis
FMCT	Fissile Material Cut-off Treaty
FOC	Full Operational Capability
FOSEP	Follow-On Sensor Evaluation Program
FSC	Forum for Security Cooperation
FSU	Former Soviet Union
FTIR	Fourier Transform Infrared
FTMW	Fourier Transform Microwave
FY	Fiscal Year
GC	Gas Chromatograph
GEMI	Global Exchange of Military Information
GOCO	Government-Owned, Contractor-Operated
GPM	Gas Permeable Membrane
GPS	Global Positioning System
GUI	Graphical User Interface
HAS	High Availability System
HEU	Highly-Enriched Uranium
HQDA	Headquarters, Department of the Army

HWAD	Hawthorne Army Depot
IA	Implementing Agent
IAEA	International Atomic Energy Agency
IATS	Inspection Aids and Tools Systems
IAW	In Accordance With
IC	Intelligence Community
ICBM	Inter-continental Ballistic Missile
IDC	International Data Center
IITRI	Illinois Institute of Technology Research Institute
IMS	International Monitoring System
INA	Integrated Notification Application
INEEL	Idaho National Engineering and Environmental Laboratory
INF	Intermediate-Range Nuclear Forces
INRAD	Intrinsic Radiation
IOT&E	Initial Operational Test and Evaluation
IR	Infrared
IRLS	Infrared Line Scanner
IRM	Intermediate-Range Missile
ISTC	International Science and Technology Center
ITMS	Ion Trap Mass Spectrometer
ITSS	Intra-theater Treaty Support System
IV&V	Independent Validation and Verification
IWG	Implementation Working Group
JCG	Joint Consultative Group
JCIC	Joint Compliance and Inspection Commission
JTA	Joint Test Assemblies
JTF	Joint Trial Flight
LANL	Los Alamos National Laboratory
LCM	Life Cycle Management
LEU	Low-enriched Uranium
LTBT	Limited Test Ban Treaty
MACOM	Major Army Command
MAJCOM	Air Force Major Command
MBF	Military Biological Facility
MEMS	Microelectrical Mechanical Systems
MINATOM	Ministry of Atomic Energy
MIND	Micromachined Integrated Neutron Detector
MIR-MAIDS	Micropower Impulse Radar - Mine Array Imaging and Detection System

MIRV	Multiple Independently-targeted Re-entry Vehicle
MIS	Management Information System
MITOF	Membrane Inlet Time-of-Flight Mass Spectrometer
MMW	Millimeter Wave
MOA	Memorandum on Attribution/Memorandum of Agreement
MOU	Memorandum of Understanding
MOUS	Memorandum of Understanding on Succession (ABM Treaty)
MPA	Methyl Phosphoric Acid
MRI	Mutual Reciprocal Inspections
MRMC	Medical Research and Materiel Command
MS	Mass Spectrometer
MSC	Major Subordinate Command
MTAT-1	Multi-Treaty Inspection Aids/Tools
MTCR	Missile Technology Control Regime
NATO	North Atlantic Treaty Organization
NDC	National Data Center
NDE	Non-Destructive Evaluation
NELA	Nuclear Explosive-Like Assemblies
NIMA	National Imagery and Mapping Agency
NIST	National Institute for Standards and Technology
NMD	National Missile Defense
NMR	Nuclear Magnetic Resonance
NNWS	Non-Nuclear Weapons State
NOFES	Notification Front-End System
NPT	Nuclear Non-Proliferation Treaty
NRC	Nuclear Regulatory Commission
NRRC	Nuclear Risk Reduction Center
NSF	National Science Foundation
NSIWG	Nuclear Safeguards Implementation Working Group
NTM	National Technical Means
NTPO	Nuclear Treaty Program Office
NTSS	National Treaty Support System
NTT	Nuclear Test Treaties, including CTBT and TTBT
NTV	National Trial Visit
NTW	Navy Theater-Wide
O&M	Operations and Maintenance
OAS	Organization of American States
OCONUS	Outside Continental United States
OIA	Optimal Immuno Assay
ONA	Office of National Authority

OOV	Object of Verification
OP	Organo Phosphorous
OPCW	Organization for the Prohibition of Chemical Weapons
OPS	Operation Planning System
OPSEC	Operational Security
OS	Open Skies
OSATAPS	Open Skies Annotation, Tracking, and Plotting System
OSCC	Open Skies Consultative Commission
OSCE	Organization for Security and Cooperation in Europe
OSD	Office of the Secretary of Defense
OSI	On-Site Inspection
OSIA	On-Site Inspection Agency (subsumed by DTRA)
OSMAPS	Open Skies Management and Planning System
OSNS	Open Skies Notification System
OSSDEF	Open Skies Standard Data Exchange Format
OUUSD(AT&L)	Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics
OUUSD(P)	Office of the Under Secretary of Defense for Policy
P5	Permanent Members of the United Nations Security Council
PAROS	Prevention of an Arms Race in Outer Space
PATS	Portable Antenna Telemetry System
PCR	Polymerase Chain Reaction
PDM	Programmed Depot Maintenance
PE	Program Element
PEM	Program Element Manager
PFP	Pulsed Flame Photometric Detector
PIA	Program for Immediate Action
PINS	Portable Isotopic Neutron Spectroscopy
PNET	Peaceful Nuclear Explosions Treaty
PNL	Pacific Northwest National Laboratory
POE	Point of Entry
POI	Program of Instruction
POM	Passive Overflight Module
PPBS	Programming, Planning, and Budgeting System
PPCM	Perimeter and Portal Continuous Monitoring
PPRA	Plutonium Production Reactor Agreement
PrepCom	Preparatory Commission
PROC	Procurement
PTS	Provisional Technical Secretariat
Q	Quarter (as in 1QFY96)

QA/QC	Quality Assurance/Quality Control
QTR	Quarter
R&D	Research and Development
RAB	Requirements Assessment Board
RATE	Requirement Assurance Test and Evaluation
RDT&E	Research, Development, Test, and Evaluation
REVCON	Review Conference
RIS	Radiation Inspection System
RIST	Regional Inspection Simulation Tool
RFP	Request for Proposal
RPV	Remotely Piloted Vehicle
RV	Re-entry Vehicle
RVB	Requirements Validation Board
RVOSI	Re-entry Vehicle On-Site Inspection
S&TS	Strategic and Tactical Systems
SAC	Strategic Arms Control
SALT	Strategic Arms Limitation Talks
SA/LW	Small Arms/Light Weapons
SAR	Synthetic Aperture Radar
SAROS	SAR for Open Skies
SARPRO	SAR Processor
SAV	Special Right of Access Visit
SBCCOM	Soldier and Biological Chemical Command
SCC	Standing Consultative Commission
SCDS	START Central Data System
SDI	Strategic Defense Initiative
SFAI	Swept Frequency Acoustic Interferometry
SIMS	Secondary Ion Mass Spectrometry
SFE	Supercritical Fluid Extraction
SLBM	Submarine-Launched Ballistic Missile
SLCMs	Sea-Launched Cruise Missiles
SLV	Space Launch Vehicle
SMDC	U.S. Army Space and Missile Defense Command
SNM	Special Nuclear Materials
SOA	Strategic Offensive Arms
SOP	Standard Operating Procedure
SRM	Shorter-Range Missile/Solid Rocket Motor
SSI	Suspect Site Inspection
SSS	Strengthened Safeguards System
SSSF	Single, Small Scale Facility

STARS	Strategic Target System (U.S. Army)
STARS	START Tracking and Reporting System (U.S. Air Force)
START	Strategic Arms Reduction Treaty
STI	Safeguards, Transparency, and Irreversibility
STRATCOM	Strategic Command
SVAWG	Security and Vulnerability Analysis Working Group
SVC	Special Verification Commission
SWFLANT	U.S. Navy Special Weapons Facility Atlantic
SWFPAC	U.S. Navy Special Weapons Facility Pacific
TAG	Technical Assessments Group
THAAD	Theater High Altitude Area Defense
TEI	Technical Equipment Inspection
TI	Technical Instruction
TIA	Transparency in Armaments
TID	Tamper Indicating Device
TINA	Tools and Information Needs Assessment
TLE	Treaty Limited Equipment
TLI	Treaty Limited Item
TMD	Theater Missile Defense
TMDITS	Theater Missile Defense Information Tracking System
TNS	Telephone Notification System
TOCDF	Tooele Chemical Disposal Facility
TOF	Time of Flight
TOPS	Transportable Operational Planning System
TOSI	Technical On-Site Inspection
TPPS	Tag Parameter Performance in a START III Accountancy Regime
TTBT	Threshold Test Ban Treaty
TTF	U.S. Navy Trident Training Facility
TTGCE	Temporal Thermal Gradient Capillary Electrophoresis
TVO	Technical Verification Office
UAV	Unmanned Aerial Vehicle
UCD	Unconventional Concealment Device
UK	United Kingdom
UN TIA	United Nations Transparency in Armaments
UNMOVIC	United Nations Monitoring, Verification and Inspection Commission on Iraq
UPE	Ultrasonic Pulse Echo
U-RAM	Ultrasonic—Remote Assay of Munitions
USCINCEUR	U.S. Commander-in-Chief, Europe
USAF	U.S. Air Force
USAFE	U.S. Air Forces in Europe

USAMRIID	U.S. Army Medical Research Institute for Infectious Diseases
USAREUR	U.S. Army Europe
USD(AT&L)	Under Secretary of Defense for Acquisition, Technology and Logistics
USD(P)	Under Secretary of Defense for Policy
USEUCOM	U.S. European Command
USG	United States Government
USNAVEUR	U.S. Naval Forces, Europe
USSR	Union of Soviet Socialist Republics
VCC	Verification Coordination Committee
VD99	Vienna Document 1999
WMD	Weapons of Mass Destruction

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APPENDIX B

DESCRIPTIONS OF CURRENT ARMS CONTROL TREATIES AND AGREEMENTS

B.1 CONVENTIONAL ARMS CONTROL

B.1.1 THE TREATY ON CONVENTIONAL ARMED FORCES IN EUROPE

The CFE Treaty entered into force on July 17, 1992, and is acknowledged to be a cornerstone of European military stability. The Treaty committed the initial 22 participating NATO and Warsaw Pact states to reducing military holdings in five categories of treaty-limited equipment (TLE) in a regionally differentiated area of application extending from the Atlantic Ocean to the Ural Mountains (ATTU). It has since been adapted to accommodate the break-up of the USSR and Czechoslovakia, augmenting the membership to 30 States Parties. Personnel limitations are also included in CFE, but they are contained in a politically binding associated agreement (known as CFE 1A). Included in the Treaty's provisions is the requirement for comprehensive information exchanges on the structure and holdings of each participating state's ground and air forces within the ATTU. The initial information exchange took place in November 1990 and covered over 280,000 pieces of TLE in the inventories of the participating states. To monitor compliance, the Treaty has a quota-based, intrusive, on-site verification regime for inspecting TLE holdings and force structure and a non-quota regime for monitoring the required destruction of excess TLE. The Treaty's 23 articles and eight protocols require each participating state to use 52 separate notifications for such activities as intent to inspect, changes in force structure or holdings of TLE, and reduction events.

The Treaty's implementation occurred over four distinct periods. The baseline inspection period occurred until 120 days after EIF and focused on the validation of TLE holdings. This was followed by a 36-month phased reduction period that extended to November 1995, when each nation was to have reduced its TLE to or below its specified limits. The reduction period was followed by a 120-day residual level validation period to determine each nation's compliance with the established equipment ceilings, which ended in March 1996. Subsequent to this residual level validation period, the Treaty now provides for continued monitoring of compliance for the unlimited duration of the Treaty.

The Treaty mandates review conferences to be held every fifth year. The first such RevCon took place in May 1996, at which time the States Parties reaffirmed the viability of the Treaty and committed themselves to enhancing the Treaty's effectiveness in the context of a changing European security environment. As part of this effort and to address specific Russian concerns, the Parties reached an agreement at the RevCon on the disputed "flank" issue. The agreement specifies a realignment of the CFE map for the flank zone, and mandates additional equipment constraints and transparency measures, including additional inspections and detailed data notifications for both the original and redesignated flank zones. States Parties also agreed at

the RevCon to continue negotiations toward modernizing the Treaty as a matter of priority. The scope and parameters of CFE adaptation negotiations were agreed to during the OSCE Lisbon Summit in December 1996. Talks began in January 1997.

On July 23, 1997, the parties adopted a paper entitled "Certain Basic Elements for Treaty Adaptation." This paper provided the blueprint for Treaty adaptation. This was followed by another important adaptation agreement, known as the "Decision of the Joint Consultative Group on CFE Adaptation," that was signed on March 30, 1999. It resolved key outstanding issues concerning the structure of the adapted Treaty and marked the movement of adaptation negotiations into their final stages. The CFE Agreement on Adaptation was signed on November 19, 1999 by the current 30 States Parties at the OSCE Summit of Heads of States or Government in Istanbul, Turkey.

The most significant structural changes include the elimination of groups of states and nested zones (the Flank Zone will be retained). The Adapted Treaty replaces the former bloc and zonal structure with nationally-based limits, with each state having National Ceilings and Territorial Ceilings on TLE. Ceiling adjustments can take place at any time between the planned five-year review conferences, but are subject to specific limitations. Territorial Ceilings can be temporarily exceeded when a military operation is conducted under the auspices of the United Nations or the OSCE for peacekeeping purposes, but shall be subject to providing prior notification. The provision requiring host-nation consent to station troops is strengthened in the adapted Treaty and all States Parties must be notified after such approval is granted. The verification and information regime of the original Treaty is improved by promoting enhanced transparency with increased quotas for mandatory on-site inspections and additional TLE data reporting requirements. The Adaptation Agreement also includes an Accession Clause that opens this security regime to other European States, subject to approval by all existing members.

The CFE Final Act was also adopted in Istanbul and outlines specific political commitments related to the Adapted CFE Treaty. Some of the political concerns expressed in the Final Act are related to current and future Russian deployments in Chechnya, the Pskov oblast, and Kaliningrad, as well as the presence of Russian forces in Moldova and Georgia. Russia reaffirmed its commitment to fulfill all Treaty obligations, while also expressing a commitment to exercise restraint in its future deployments and handling the equipment levels in the Flank Zone. Russia also made agreements with Georgia and Moldova to withdraw forces from their territories. In addition, several countries have committed to maintaining current CFE Territorial Ceilings, and in some cases, agreed to reduce their ceilings.

B.1.2 CSBMS AND THE FORUM FOR SECURITY COOPERATION

Within the OSCE, the Forum for Security Cooperation (FSC) has become the principal

An updated version of the Vienna Document (VD99) on Confidence and Security-Building Measures (CSBMs) was negotiated in the FSC and signed at Istanbul in November 1999, and subsuming previous CSBM agreements. VD99 requires annual exchanges on defense and force planning, equipment systems and major weapons holdings, and the command structure, size, strength, location of military units and formations. Military exercises, activities, and movements are examples of notifiable activities that must be announced 42 days in advance. The agreement requires participating states to accept up to three inspections annually to monitor compliance. It also permits evaluation visits to verify reported data. Additional activities include annual calendar exchanges, air base and facility visits, demonstrations of new equipment, joint military and training exercise, seminars on cooperation, and observation of certain military activity. Two new sections and a new chapter on regional security were added to VD99. The new sections list specific limitations to artillery pieces and clarify the provisions of the observation process. The new chapter on regional security encourages the establishment of CSBMs that address regional issues on a bilateral and multilateral basis. The U.S. will conduct a limited number of CSBM inspections and evaluation visits annually and expects to receive three inspections and one evaluation visit annually of its forces in Europe.

While VD99 applies to all 54 OSCE states, CFE applies to only 30 of these states. The CFE requirements, constraints, and verification provisions are more stringent compared to VD99.

The Global Exchange of Military Information is an OSCE-sponsored information exchange designed to promote openness and confidence-building among OSCE participants regarding military force structures. Adopted at the OSCE Budapest Summit on November 28, 1994, GEMI requires all 54 participating states of the OSCE to exchange annually (NLT April 30) information on military armaments, equipment, and personnel stationed in their respective territories and worldwide. The first GEMI report was exchanged on July 1, 1995.

B.1.3 THE UNITED NATIONS REGISTER OF CONVENTIONAL ARMS

United Nations Resolution 46/36L, entitled, "Transparency in Armaments," adopted December 9, 1991 established a register of conventional arms transfers and inventories. This resolution requests member nations to voluntarily provide on an annual basis data on exports and imports of conventional arms in seven designated categories of equipment (battle tanks, armored combat vehicles, large caliber artillery systems, combat aircraft, attack helicopters, warships, and missiles and missile launchers). Member nations are also invited to provide background information regarding military holdings, procurement through national production, and relevant policies. The United States is committed to complying with the requirements of the register, but there are no associated verification provisions.

The Conference on Disarmament (CD) in Geneva, along with a United Nations Group of Governmental Experts will evaluate the existing provisions of the register and consider various

measures to expand and/or strengthen the regime. The United States is currently conferring with its allies on possible measures for an expanded regime.

B.1.4 CONVENTION ON CONVENTIONAL WEAPONS (CCW)

The CCW is one of several legally binding international agreements, known as “Laws of War,” which govern the conduct of military operations. It is also known as the Convention on Prohibitions or Restrictions of the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects and entered into force in December 1983. The convention was negotiated from 1978 to 1980 under the auspices of the United Nations. Although the United States signed the Convention in 1982, it did not ratify Protocol I and Protocol II until March 24, 1995. Under Article IV of the Convention a country ratifying the Convention was only obligated to accept two of the original three protocols. Accordingly, the U.S. approval of Protocols I and II constituted ratification.

At the conclusion of the first CCW Review Conference in May 1996, 51 countries agreed to adopt significant improvements to the original document, including an Amended Protocol II and a new Protocol prohibiting the use of blinding laser weapons. The CCW is now comprised of four protocols that restrict or prohibit the use of various conventional weapons: Protocol I prohibits the use of non-detectable fragments; Protocol II governs the design and use of mines, booby traps, and other devices; Protocol III regulates the use of incendiary weapons; and Protocol IV prohibits the use and transfer of blinding laser weapons.

The Amended Protocol II significantly strengthens the rules governing the use of APL. The new measures in Amended Protocol II include:

- an expansion of the scope of the Protocol to include internal, as well as international, armed conflict;
- a requirement that all remotely delivered APL must self-destruct within 30 days with 90 percent reliability and that no more than 1 in 1000 will function after 120 days; this provision can be deferred for up to nine years after EIF;
- the immediate prohibition on the use and transfer of non-detectable mines (APL only, not anti-tank mines); transfer restrictions apply immediately but use restrictions can be deferred for nine years from EIF;
- the principle that manually emplaced APL without self-destruct features must be used only within controlled, marked, and monitored minefields;
- specific, detailed requirements for recording and marking of minefields; and detailed requirements for sharing such information after cessation of hostilities;
- a requirement that all APL must be detectable using commonly available technology;
- a requirement that APL are not detonated by common mine detecting equipment;
- the principle that the party state laying the mines is responsible for their removal, destruction and/or maintenance; and

- a methodology for periodic consultations between states parties.

The Amended Protocol II, Protocol III, and Protocol IV were submitted to the Senate for their advice and consent to ratification in January 1997. U.S. ratification of amended Protocol II occurred on May 20, 1999. The Senate has deferred action on Protocol III and IV. Protocol IV entered into force on July 31, 1998. Protocol II entered into force on December 3, 1998.

B.1.5 PRESIDENTIAL POLICY ON ANTI-PERSONNEL LANDMINES

In May 1998, the President codified, strengthened and expanded U.S. APL policy (PDD/NSC-64). Current policy directs the Department of Defense to end the use of APLs outside Korea by 2003, to aggressively pursue the objective of having APL alternatives ready for Korea by 2006, and to conduct an aggressive search for alternatives to mixed anti-tank systems that contain anti-personnel submunitions. Additionally, the President announced that we will sign the Ottawa Convention by 2006 if we succeed in identifying and fielding suitable alternatives to our APL and mixed anti-tank systems by then. These alternatives must provide equivalent military effectiveness and safety of use while minimizing risks to non-combatants and not creating other humanitarian problems. The President's 1998 policy reconfirmed previous APL commitments to cap the U.S. APL stockpile, cease U.S. export of APL, expand U.S. humanitarian demining programs and pursue an APL ban in the Conference on Disarmament.

B.1.6 TREATY ON OPEN SKIES

The Treaty on Open Skies provides for unarmed aerial observation flights using designated imaging sensors, with specified resolutions and flight modalities, over the entire territory of its signatories. The objectives of the Treaty are to improve openness and transparency, to facilitate the monitoring of compliance with existing or future arms control agreements, and to strengthen the capacity for conflict prevention and crisis management in the OSCE framework. Once the Treaty enters into force, participants will accept and execute overflights in accordance with the established quota allocation system.

The Treaty is of unlimited duration and, after EIF, its implementation will be phased in over a three-plus year period, at which time all Treaty provisions will apply. Twenty-seven states, including those of the North Atlantic Treaty Organization (NATO) and the former Warsaw Pact, plus five of the newly independent states of the FSU, originally signed the Treaty. Ratification by 20 states, to include all states with a passive quota greater than eight, is required for EIF. The United States ratified the Treaty and deposited its Instrument of Ratification in December 1993. For six months after EIF, any other OSCE member may accede to the Treaty. After this six-month period, the Treaty is open to accession by other states.

Selected provisions of the Treaty establishing the Open Skies Consultative Commission (OSCC), the international body composed of Treaty adherents and charged with overseeing

Treaty implementation, provisionally came into effect when it was signed on March 24, 1992. The OSCC is empowered to consider questions of compliance, resolve ambiguities and differences of interpretation, make decisions on the accession of new states, agree on improvements to the Treaty (to include the resolution of technical matters dealing with sensor capabilities and usage), develop arrangements for the sharing of data, and review and set quota allocations. The OSCC may also add sensors and improve the quality of the sensor data. U.S. agreement to such changes may require notification to the Senate. All decisions of the OSCC are by consensus, that is, the absence of dissent. The Treaty directs the OSCC to meet no less than four times per year.

At full implementation, projected to begin after January 1, 2005, the Treaty allows the use of framing and panoramic cameras, synthetic aperture radars (SAR), infrared line scanning systems (IRLS), and video cameras. Each of these sensors has agreed-upon technical requirements specifying fields of view and resolution. The Treaty currently limits resolution to only permit distinguishing general vehicle types from each other. During the phased implementation period, Open Skies aircraft are permitted to have panoramic and framing optical cameras, video cameras, and SAR. After full implementation, IRLS can also be used. Open Skies-approved sensors must be commercially available to all participants.

For the first three years plus after EIF, participants are obligated to receive (and may conduct) only 75 percent of their full quota. The full U.S. quota is 42 overflights. Consequently, the United States could receive up to 31 overflights each year during the phased implementation period. However, during the initial implementation period, that is, until the end of the calendar year following EIF, the United States is scheduled (through specific treaty provisions) to receive only four overflights and to conduct nine overflights.

The number of observations to be performed and received by the United States after the first implementation period and prior to full implementation will be determined on a yearly basis. It is anticipated that the number per annum during the initial implementation phase will be less than the maximum allowed by the Treaty (31). For planning purposes, it is assumed that the United States will conduct 15 observations per year and receive 15 observations per year following the first observation period. During full implementation of the Treaty, it is anticipated that the yearly number of observations will be less than the maximum allowed by the Treaty (42). For planning purposes, it is assumed that the United States will conduct 22 and receive 22 Open Skies observations per year during full implementation.

Three years after EIF, a mandated Treaty conference will be held to review the implementation of Open Skies. A review could be convened earlier if requested by three signatories. Mandatory Treaty reviews will be held every fifth year thereafter.

B.1.7 WASSENAAR ARRANGEMENT

The United States and 32 other states formally implemented the politically binding Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies in July 1996. The Wassenaar Arrangement was established in response to new regional security threats arising after the Cold War, with the aim of restraining trade in sensitive dual-use technologies, and preventing destabilizing accumulations of arms in regions of concern. The Arrangement requires participants to report arms deliveries to non-signatories of the agreement on a semi-annual basis. Required data exchanges will take place by 30 April and 31 October each year.

B.1.8 DAYTON ACCORDS

The General Framework Agreement for Peace in Bosnia and Herzegovina, better known as the Dayton Peace Accords, was signed in Paris on December 14, 1995. The OSCE was charged with leading negotiations to craft a series of CSBMs and arms control measures affecting the former Republic of Yugoslavia parties. Annex 1-B of the Dayton Peace Accords mandated three separately negotiated agreements: Article II (Confidence and Security Building Measures), Article IV (Measures for Sub-Regional Arms Control), and Article V (Regional Arms Control Agreement). The goal of Annex 1-B is to achieve regional security through cooperation and balanced conventional force levels between the parties.

The Article II agreement was signed in Vienna by three parties: the Republika Srpska, the Federation of Bosnia and Herzegovina, and the Republic of Bosnia and Herzegovina. The initial inspections were OSCE-led for the purpose of validating the parties' exchanged data and to train the parties to conduct arms control inspections. The baseline inspections were performed from March 1996 through June 1996. NATO held an Article II inspector training course in March 1996.

The Article IV Agreement on Sub-Regional Arms Control calls for an arms control regime similar to the CFE Treaty. It was signed in Florence on June 14, 1996 by five parties, the three parties to Article II plus the Republic of Croatia and the Federal Republic of Yugoslavia. Article IV limited the quantities of agreement-limited armaments (ALA) each party may hold and specified a time period for destruction of holdings above these limits. Final declarations of ALA holdings by each affected party were submitted to OSCE on November 1, 1997, noting collective reductions of over 6700 weapons. Implementation of Article IV will continue with a four-month residual validation inspection period, as well as efforts to improve the Protocol on Existing Types to include in ALA some mortars, anti-tank weapons and rocket tubes previously excluded.

A mandate for Article V was adopted in November 1998.

B.1.9 SMALL ARMS AND LIGHT WEAPONS NEGOTIATIONS

The United States participates in a wide range of initiatives to address the growing international concern over the propagation of small arms and light weapons. There are currently 14 international for a, which have proposed or enacted initiatives to curb the small arms problem. These initiatives include codes of conduct, moratoriums and proposals for an international registry. There have been substantial developments in the United Nations, the Organization of American States (OAS) and the Wassenaar arrangement.

The OAS has adopted the Inter American Convention Against the Illicit Manufacturing of and Trafficking in Firearms, Ammunition, Explosives and Other Related Materials. This convention standardizes the marking and transit licensing of firearms in the Western Hemisphere. On June 8, 1998 the President submitted this convention to the Senate for advice and consent to ratify. The Economic and Social Committee of the UN is currently negotiating a similar agreement as a protocol to its convention against Transnational Organized Crime. The UN is also preparing for a conference on the illicit trade in small arms and light weapons in all its aspects, to be held in 2001.

The discussions within the Wassenaar Agreement and those of the UN Group of Experts, which advocate some form of international transparency, signal a shift in the paradigm used to address small arms. Initiatives proposed in these fora have expanded past those currently being pursued in relation to crime prevention and now include arms control measures. With the consideration of arms control measures, DoD's responsibilities regarding small arms will proportionately increase. These responsibilities could include accurate record keeping of all private and state to state small arms transfers and the accounting for and reporting of stockpiles, acquisitions, development and destruction of small arms, light weapons and explosives.

B.2 STRATEGIC ARMS CONTROL

Strategic arms control is experiencing a dynamic period of agreement formulation and implementation during which dramatic reductions are occurring in the strategic nuclear forces of the United States and the FSU. In December 1994, the START Treaty entered into force. In January 1996, the United States ratified the START II Treaty, and in April 2000, Russia also ratified the Treaty, as amended by the September 1997 START II Protocol, which extended the time line for completing reductions. The Presidents of the United States and Russia have outlined the next steps for further reductions (i.e., START III). Agreements to resolve various Anti-Ballistic Missile (ABM) Treaty issues are awaiting ratification approval by all Treaty Parties. As the treaties and potential agreements take shape and are implemented, new and developing technologies must be available to help implement, verify, and monitor compliance. The following sections discuss the status of strategic arms control.

B.2.1 THE START TREATY

The START Treaty was signed on July 31, 1991, and entered into force on December 5, 1994. It is the first treaty that has resulted in significant reductions in the deployed strategic offensive arms (SOA) of the United States and the FSU. It is a treaty of 15 years duration that the parties can agree to extend for additional five-year increments. However, at the March 1997 Helsinki Summit, Presidents Clinton and Yeltsin agreed to resolve “issues related to the goal of making the current START Treaties unlimited in duration.” START establishes a complex verification regime designed to assist in deterrence and detection of activities that are not consistent with the provisions of the Treaty. The following is a brief overview of four key elements of this regime that impact DoD verification, implementation, and compliance activities.

Inspections/Exhibitions

START establishes thirteen types of on-site inspections/exhibitions: baseline, data update, new facility, suspect site, re-entry vehicle, post-exercise dispersal, conversion or elimination (CorE), close-out, formerly declared facility, technical characteristics exhibitions, distinguishability exhibitions, baseline exhibitions, and long-range non-nuclear ALCMs exhibitions. All inspections, except for baseline inspections and exhibitions, are applicable for the life of the Treaty. Details concerning the inspections and exhibitions can be found in the Treaty’s Inspection Protocol and its annexes. In addition, as part of the Joint Compliance and Inspection Commission (JCIC) Protocol, the provisions for requesting “a visit with special right of access,” or SAV, are established. The SAV is designed as a potential method to resolve compliance concerns. There is no obligation to accept a request for a special access visit.

Continuous Monitoring

Continuous monitoring activities under START provide the Parties with the right to monitor final assembly facilities for mobile ICBMs. The United States is permitted to conduct continuous monitoring (i.e., the establishment, operation, and maintenance of a Perimeter and Portal Continuous Monitoring (PPCM) system at Votkinsk, Russia and Pavlograd, Ukraine). The existing U.S. PPCM system at Votkinsk was established under the INF Treaty to ensure SS-20 missile production is not taking place, but is also used for START purposes to monitor SS-25 missile production at this final assembly facility. The U.S. PPCM facility at Pavlograd has been phased out after negotiations between the United States and Ukrainian governments. However, the site at Pavlograd has been designated as a suspect site and is subject to inspection as such. The FSU has the right to establish a PPCM system at the Peacekeeper First Stage Final Assembly Facility at Thiokol Corporation, Promontory, Utah. The FSU states have not exercised their right to establish continuous monitoring at Thiokol.

Data Exchanges

The memorandum of understanding (MOU), which contains data on the number and location of SOA, must be updated continuously and exchanged every six months for the duration

of the Treaty. Separate from the MOU, the Army provides treaty-required notification updates at six-month intervals on its Polaris A-3 SLBMs (identified as a former type SLBM) which are used in the Army's Strategic Targeting System (STARS) program. In accordance with Agreed Statement Twenty-nine of the START Treaty, the Polaris A-3 SLBMs are no longer reportable once they have been modified for use in the STARS program. In addition, notifications concerning inspection team activities are exchanged when inspections are conducted. Details concerning data exchanges can be found in Article VIII and the Notification and Inspection protocols of the Treaty.

The START Treaty also requires the Parties to conduct measurements and broadcast telemetry during all flight tests of ICBMs and SLBMs and bans any practice (including encryption, encapsulation, and jamming) that denies full access to telemetric information, with certain limited exceptions. START also requires that the Parties provide tapes of all telemetric information broadcast, interpretive data to assist in the analysis of the telemetric information, and acceleration profiles after each test flight.

Joint Compliance and Inspection Commission

The START Treaty established the Joint Compliance and Inspection Commission (JCIC). The JCIC is the forum wherein Treaty implementation and compliance issues are discussed, and changes to improve the viability and effectiveness of the Treaty are negotiated.

B.2.2 THE START II TREATY

The START II Treaty, signed on January 3, 1993, by the Presidents of the United States and Russia, has obtained the advice and consent of the U.S. Senate and, in an amended form, of the Russian Federal Assembly. Implementation of START II will reduce the number of deployed, strategic, nuclear warheads to between 3,000 and 3,500 for each state party, a reduction of about two-thirds from pre-START levels. It bans deployment of the most destabilizing type of nuclear weapons system, land-based MIRVed ICBMs, as well as requiring the elimination or physical conversion of all heavy ICBM launchers and the destruction of all deployed and non-deployed heavy ICBMs and their launch canisters (Russia's SS-18 is the only existing heavy ICBM). It permits additional downloading of warheads attributed to ICBMs and SLBMs, but attributes heavy bombers with the number of warheads for which they are actually equipped. START II also permits reorienting certain nuclear-equipped heavy bombers to a conventional role. Although the START II Treaty "exists only as long as START I," Presidents Clinton and Yeltsin agreed at the March 1997 Helsinki Summit to resolve "issues related to the goal of making the current START Treaties unlimited in duration" and to extend to December 31, 2007, the completion of eliminations to reach final START II limits. The extension of the START II implementation timeline has been codified in a Protocol signed by U.S. Secretary of State Albright and then RF Minister of Foreign Affairs (MFA) Primakov on September 26, 1997. However, the Protocol has not yet been submitted to the U.S. Senate for its advice and consent.

START II verification builds on the regime established under START. Key additional elements of the START II regime include data exchanges, inspections, exhibitions, and a Bilateral Implementation Commission (BIC) between the United States and Russia.

At the 1997 Helsinki Summit, Presidents Clinton and Yeltsin further agreed to place all strategic nuclear delivery vehicles to be eliminated under START II in a deactivated status by December 31, 2003, “by removing their nuclear warheads or taking other jointly agreed steps.” This commitment was codified in an exchange of letters between Secretary Albright and then Russian MFA Primakov, which accompanies the September 26, 1997 START II Protocol signed on this same date.

Inspections

To assist in verifying additional reduction and conversion measures, additional inspection rights beyond START have been included in START II. On-site inspections will be conducted during the elimination of all SS-18 heavy ICBMs and their launch canisters. Inspections may also be conducted during the conversion of 90 SS-18 silo launchers that may be used for SS-25-type missiles. Inspectors have the right to view and confirm the Treaty-specified changes that must be made to these silos. Launcher modifications include pouring five meters of concrete into the base and installing a restrictive ring in the headwork area of each silo. In addition to the re-entry vehicle inspections conducted under START, the United States may conduct four additional re-entry vehicle inspections each year on ICBMs that are deployed in converted SS-18 silo launchers. Heavy bomber inspection rights have been expanded to allow additional observation of aircraft weapons bays, including limited inspection of the B-2 bomber.

Exhibitions

START II provides for heavy bomber exhibitions that are different from the heavy bomber exhibitions required under START. No later than 180 days after START II EIF, the United States and Russia must exhibit one heavy bomber of each type and variant specified in the Memorandum on Attribution (MOA) to demonstrate the number of nuclear weapons that each heavy bomber type or variant is actually equipped to carry. Furthermore, heavy bombers that are reoriented to a conventional role and heavy bombers returning to a nuclear role may need to be exhibited to demonstrate differences that would be observable using NTM and to confirm that “actually equipped” numbers do not exceed MOA specifications.

Data Exchanges

START II requires an exchange of data according to categories contained in the MOA no later than 30 days after EIF. Additional notification requirements focus primarily on changes in heavy bomber status and SS-18 silo conversion. Since the START II notifications are built on

the regime established by START, the MOA and data exchange will only contain data uniquely affected by START II counting rules and provisions.

Bilateral Implementation Commission

START II establishes an implementation and compliance commission, the BIC, to promote the objectives of and implement the Treaty, resolve compliance questions, and agree on measures to improve the Treaty's viability and effectiveness.

B.2.3 START III NEGOTIATIONS

Since the Russian Federation ratified START II, discussions on a START III treaty have intensified, though formal negotiations have not yet begun. Current DoD planning assumptions therefore assume that START III EIF could occur as early as calendar year 2003. At the March 1997 Helsinki summit, Presidents Clinton and Yeltsin agreed to certain parameters for START III including reductions to 2,000-2,500 deployed, strategic, nuclear warheads each by December 31, 2007. They also agreed that START III will, for the first time, require the U.S. and Russia to destroy nuclear warheads. It was agreed that START III should include "measures related to the transparency of strategic nuclear warhead inventories and the destruction of strategic nuclear warheads and any other jointly agreed technical and organizational measures to promote the irreversibility of deep reductions including the prevention of a rapid increase in the number of warheads."

In the Joint Statement from the Helsinki Summit, the Presidents also agreed to consider "in the context of START III," but "as separate issues, possible measures relating to nuclear long-range sea-launched cruise missiles and tactical nuclear systems, to include appropriate confidence-building and transparency measures."

B.2.4 MISSILE DEFENSE/ABM TREATY

The Antiballistic Missile (ABM) Treaty was negotiated from November 1969 to May 1972, and signed on May 26, 1972; the U.S. Senate gave its advice and consent on August 3, 1972; and the Treaty entered into force on October 3, 1972.

In the ABM Treaty, the United States and the Soviet Union agreed to a variety of qualitative and quantitative limits on their antiballistic missile systems. This was done in an effort to end competition between the two nations in the area of defensive missile systems. This competition threatened to spur a missile race between the United States and the Soviet Union in the area of offensive ballistic missile systems. As a result, the two nations took the first steps to check their rivalry in this area by placing limits on the development, testing, and deployment of ABM systems and by agreeing to forego the deployment of missile defenses of the territory of their countries.

The ABM Treaty, as modified by the 1974 Protocol, permits each side to have one limited ABM system to protect either its national capital or an ICBM field. The Soviet Union chose to defend Moscow, where they built, modernized, and continue to maintain what is now the world's only operational ABM system. The United States chose to defend the ICBM field at Grand Forks, ND, and built the U.S. ABM site at the Stanley R. Mickelsen Safeguard Complex. After a brief period of operation, the U.S. site was deactivated in 1976. The radars and interceptor launchers have not been eliminated in accordance with Treaty provisions. While still an Army installation, the site is in caretaker status with the exception of the Perimeter Acquisition Radar, which is operated by the U.S. Air Force.

Deployments at these sites are limited to no more than 100 ABM interceptor missiles and 100 ABM launchers. Additional limitations were imposed on ABM radars in terms of numbers, locations, and performance. The Treaty defined an ABM system as "a system to counter strategic ballistic missiles or their elements in flight trajectory, currently consisting of ... ABM interceptor missiles, ... ABM launchers, ... and ABM radars...." Verification is accomplished through national technical means.

The Treaty reflected concern about the capabilities of air defense systems, a concern set forth in Article VI(a) of the Treaty which prohibits giving ABM capability to missiles, launchers, or radars other than ABM interceptor missiles, ABM launchers, or ABM radars or testing them in an ABM mode. Concerns about the spread of this technology led to prohibitions in the Treaty against transferring ABM systems or components, as well as their technical plans or blueprints, to other nations. Concerns about compliance verification led to prohibitions in the Treaty against mobile ABM systems. Thus, the Treaty prohibits the development, testing, and deployment of ABM systems which are sea-based, air-based, space-based, or mobile land-based. It also prohibits the development of ABM launchers with rapid reload capability or ABM interceptor missiles with multiple independently guided warheads. ABM Treaty implementation and compliance issues are addressed at the Standing Consultative Commission (SCC) which meets at least twice a year in Geneva. The primary U.S. mechanism established to manage compliance with the ABM Treaty is the DoD Compliance Review Group (CRG) which reviews all ABM and theater missile defense (TMD) programs within the Department of Defense for treaty compliance.

Since the mid-1980s, the United States has been advancing ballistic missile defense-related technologies through programs begun under the Strategic Defense Initiative (SDI) and continued under the Ballistic Missile Defense Organization (BMDO). To date, all U.S. TMD systems described to and assessed by CRG have been certified as ABM Treaty compliant as described. This includes PATRIOT, Navy Area (formerly Navy Lower-Tier), THAAD, and Navy Theater Wide (formerly Navy Upper-Tier).

In the past, the United States has been concerned about compliance with the ABM Treaty for some of its current and future TMD systems. The ABM Treaty did not provide a clear demarcation line between ABM systems, which are limited by the Treaty, and TMD systems, which are not limited per se. In addition, the breakup of the Soviet Union raised questions about state succession; i.e., which states should succeed to the ABM Treaty responsibilities of the Soviet Union. Therefore, in November 1993, the United States began negotiations in the SCC in Geneva with Russia, Belarus, Kazakhstan, and Ukraine on the issues of ABM/TMD demarcation and state succession. On August 21, 1997, these negotiations were concluded and resulted in the completion of the following principal agreements, which were signed on September 26, 1997:

- First Agreed Statement on Demarcation - For lower velocity TMD systems (TMD interceptors with velocities not exceeding 3 km/sec), all such systems will be deemed compliant with the ABM Treaty, within the meaning of Article VI(a), so long as they are not tested against ballistic missile targets exceeding 5 km/sec in velocity or 3500 km in range.
- Second Agreed Statement - For higher velocity TMD systems (TMD interceptors with velocities above 3 km/sec), all such systems will not be tested against ballistic missile targets exceeding 5 km/sec in velocity or 3500 km in range. (Determining the Treaty compliance of each party's own higher-velocity TMD systems will remain a national responsibility.) The agreement also prohibits space-based TMD interceptors, or space-based components based on other physical principles that are capable of substituting for such interceptor missiles. All higher velocity TMD systems will be subject to the CBMA.
- Confidence-Building Measures Agreement (CBMA) - This agreement provides for a combination of data exchanges, notifications, assurances, and the possibility of voluntary demonstrations of TMD systems or observations of TMD tests, all of which are designed to reassure the Treaty partners that the TMD systems permitted under these Agreements are not being used to circumvent the ABM Treaty. The parties agreed that THAAD, NTW and the SA-12, and any future systems with interceptors exceeds 3 km/sec during any part of their flight trajectories, would be subject to the CBMA. Other lower velocity TMD systems could be included if agreed. Assurances include the following:
 - Not to deploy numbers of systems in locations which “could pose a realistic threat to the strategic forces of another party” and
 - Specifically to provide the other Parties an assessment of “development, testing and deployment of ballistic missiles other than strategic ballistic missiles, confronting that Party.”

In September-October of 1998, work was completed on procedures for implementing the CBMA. At the fifth pentannual ABM Treaty Review, the Parties also “reaffirmed the fundamental importance of the Treaty, as a cornerstone of strategic stability, for strengthening international security and for promoting the process of further reductions in strategic offensive arms.”

- Memorandum of Understanding on Succession (MOUS) - Russia, Belarus, Kazakhstan, and Ukraine are determined to be the successor states to the Soviet Union for the ABM Treaty.
- SCC Regulations (SCC Regs) - This agreement establishes a new set of procedures to allow the SCC to function effectively in a multilateral environment.
- “No Plans” statements - The Parties made non-legally-binding statements that they have no plans to:
 - Test higher velocity TMD interceptors against targets before April 1999;
 - Test TMD systems against multiple, independently-target RVs (MIRVs); and
 - Develop interceptors exceeding 4.5 km/sec for sea-based TMD and 5.5 km/sec for land- and air-based TMD.
- The Parties have also agreed to an annual exchange of information on the status of the above “no plans” statements.

These agreements will enter into force after ratification by each of the five signatories in accordance with their respective constitutional processes. President Clinton has not yet submitted the MOUS and the two agreed statements to the U.S. Senate for its advice and consent to ratification.

Regarding the development of a National Missile Defense (NMD) system designed to protect against the emerging long range missile threat from states of concern, the Administration has indicated that a decision regarding NMD deployment must be based four criteria: 1.) technology (the proposed system's operational effectiveness); 2.) whether the rogue state ballistic missile threat has developed as quickly as expected; 3.) cost; and 4.) national security and arms control policy.

President Clinton and President Yeltsin agreed at Cologne in June 1999 that the ABM Treaty remains a cornerstone of strategic stability and that it is of fundamental importance to achieving further reductions in strategic offensive arms. It is U.S. policy that the deployment of a limited NMD system would not be incompatible with the underlying strategic purpose of the ABM Treaty, i.e. to maintain strategic stability and to enable further reductions in strategic offensive arms.

B.2.5 MISSILE TECHNOLOGY CONTROL REGIME (MTCR)

The Missile Technology Control Regime is a voluntary, politically binding arrangement among states that have a common national security and foreign policy interest in arresting ballistic and cruise missile proliferation. The regime consists of common export guidelines applied to a common list of controlled items. Each member nation undertakes to implement these commitments in its domestic export control laws and procedures.

The MTCR was established in 1987 by the United States and the other G-7 economic partners (i.e., Canada, West Germany, France, Italy, Japan, and the United Kingdom). MTCR membership now totals 32 and includes Argentina, Austria, Australia, Belgium, Brazil, Czech Republic, Denmark, Finland, Greece, Hungary, Iceland, Ireland, Luxembourg, The Netherlands, New Zealand, Norway, Poland, Portugal, Russia, South Africa, Spain, Sweden, Switzerland, Turkey, and Ukraine. Additionally, a number of states, including Bulgaria, China, Israel, Romania, Slovak Republic, and South Korea have taken the steps necessary to be formally recognized as unilateral adherents to the MTCR.

The purpose of the MTCR is to restrict the proliferation of missiles, unmanned aerial vehicles, and the related technologies that could contribute to the development or production of delivery systems for WMD. Missiles include ballistic missiles, space launch vehicles (SLVs), and sounding rockets. Unmanned aerial vehicles (UAVs) include cruise missiles, drones, and remotely piloted vehicles (RPVs). The MTCR was originally concerned with nuclear-capable delivery systems, hence the original 300 kilometer range and 500-kilogram payload criteria. Since the 1991 Persian Gulf War, its scope has been broadened to include missiles capable of delivering all types of WMD (i.e., nuclear, chemical, and biological).

Controlled items are listed in the MTCR's Equipment and Technology Annex, which groups technology into two categories. Category I consists of whole rocket systems and unmanned air vehicle systems capable of delivering a payload of at least 500 kilograms to at least 300 kilometers. Transfer of Category I items requires a case-by-case review process with a strong presumption of denial. On rare occasions when the transfer of Category I items is approved, binding government-to-government end-use assurances are required as a condition of the transfer. Transfer of specially designed production facilities for Category I systems is prohibited.

Category II items include a range of dual-use technologies and complete unmanned delivery systems capable of a maximum range equal to or greater than 300 kilometers as well as their subsystems. The transfer of Category II items is permitted on a case-by-case basis. If the transfer could potentially contribute to a delivery system for WMD, end-use assurances from the recipient state are required. In addition, under the MTCR there is a strong presumption to deny the transfer of any items listed in the MTCR Annex or any missile system, whether or not it is

listed in the Annex, that, on the basis of all available, persuasive information, is intended to be used for the delivery of WMD.

To enhance the effectiveness of the MTCR regime, the full membership promptly exchanges notifications of export license denials of Category I and II items. In addition, annual plenary sessions are held to review the workings of the regime, exchange--on a voluntary basis--intelligence information and consider changes to the regime's parameters and the Annexes.

B.2.6 INTERMEDIATE-RANGE NUCLEAR FORCES TREATY (INF)

The United States and the USSR designed the INF Treaty to strengthen stability by eliminating, under strict conditions of verification, all of the intermediate-range and shorter range missiles (IRMs and SRMs) possessed by both nations. IRMs are ground launched cruise or ballistic missiles with ranges between 1,000 and 5,500 km. SRMs are also ground launched cruise or ballistic missiles with ranges equal to or greater than 500 km but no more than 1,000 km. The two nations agreed to eliminate the missiles in three phases, with intrusive on-site inspections to verify these eliminations. INF also prohibits the production, flight testing, and deployment of intermediate-range and short-range missiles in the 500-5,500 km range span.

However, the Treaty permits the production and use of existing types of booster stages which might otherwise be considered INF range missiles to conduct flight testing "for research and development purposes to test objects other than the booster systems themselves" providing that the following conditions are met: stages are different than those used in INF-declared missiles eliminated under the Treaty; launchers must be fixed and located at only R&D launch sites specified in the INF Treaty MOU; and the aggregate number of launchers does not exceed 35. Special launch notifications are also required for these R&D boosters. An example of such a U.S. booster is the STARS which is composed of the POLARIS A-3 booster plus an additional stage which is used in a variety of R&D programs. DoD elements using such boosters must maintain the R&D launch site MOU data, provide launch notifications to the US NRRC and ensure that such boosters are launched only from R&D launch sites declared in the MOU.

The United States and the Soviet Union signed the INF Treaty on December 8, 1987, and it entered into force on June 1, 1988. The Treaty is of unlimited duration; however, its inspection regime will end on May 31, 2001. Since the collapse of the Soviet Union, the Russian Federation, Ukraine, Belarus, and Kazakhstan have been unofficially recognized to be the successor states to the treaty obligations incurred by the Soviet Union, due to their participation in the Special Verification Commission (SVC) and their involvement in the Treaty's verification regime.

The INF Treaty uses national technical means and on-site inspections to ensure the ban on INF missiles is observed. At the time the Treaty was ratified, this verification regime was the

most intrusive ever agreed to and surpassed all existing verification standards. Annual quota inspections and continuous monitoring are the only type of notification-driven inspections and activities still being conducted by the States Parties to the INF Treaty. All INF missiles were eliminated by May 12, 1991. The DTRA continues to operate the PPCM system, which monitors the ban on production of SS-20 missiles at the Russian Votkinsk production facility. Additionally, the Russian presence at our Magna, Utah site will continue to be supported until the inspection regime ends.

B.2.7 PLUTONIUM PRODUCTION REACTOR AGREEMENT

At the June 1994 Gore-Chernomyrdin Commission, the United States and the Russian Federation agreed to a compliance regime concerning the shutdown of plutonium production reactors and the cessation of use of newly produced plutonium for nuclear weapons (Plutonium Agreement). On September 23, 1997, Vice President Gore and Prime Minister Chernomyrdin signed an agreement on Cooperation Regarding Plutonium Production Reactors. Under this agreement, both U.S. and Russian shutdown plutonium production reactors would not resume operation, weapons-grade plutonium production would cease by December 31, 2000 and all plutonium produced after EIF in the three currently operating Russian production reactors will not be used in nuclear weapons. The three operational Russian production reactors at Zheleznogorsk and Seversk will undergo modifications for this purpose under a Cooperative Threat Reduction Program. Additionally, plutonium storage facilities at both Zheleznogorsk and Seversk will be monitored to ensure that this special nuclear material (SNM) is not recycled into new weapons.

The United States, with the Department of Energy as executive agent, will provide step-by-step funding for cooperative implementation of the modifications to these three reactors. (The Department of Energy is designated U.S. executive agent for other provisions of the Agreement with monitoring assistance from DTRA.) The Agreement entered into force upon signature, and may be terminated by either party upon one year written notification.

B.3 CHEMICAL ARMS CONTROL

B.3.1 THE CHEMICAL WEAPONS CONVENTION (CWC)

The Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction, commonly called The Chemical Weapons Convention (CWC), was concluded and opened for signature in Paris on January 13, 1993. The United States was one of the original signatories. A Preparatory Commission (PrepCom), made up of signatory States, was established in The Hague to carry out necessary preparations for implementation of the CWC.

The CWC entered into force April 29, 1997. The CWC implementing organization, the Organization for the Prohibition of Chemical Weapons (OPCW) is headquartered in The Hague, Netherlands. The OPCW is composed of the Conference of States Parties, an Executive Council, and a Technical Secretariat. The United States is a member of the Executive Council. The Technical Secretariat is responsible for executing the verification provisions (e.g. inspections) of the CWC. Inspection teams composed of international civil servants drawn from State Party nationals are conducting on-site inspections in accordance with the terms of the Convention.

The CWC bans development, production or other acquisition, stockpiling or retention, transfer, use, or preparations to use chemical weapons (CW). It requires destruction of CW stockpiles and CW production facilities no later than 10 years after EIF of the CWC. A five year extension to the destruction timelines is permitted under limited circumstances.

The CWC also establishes a verification regime consisting of declarations, initial inspections of declared facilities (both military CW and commercial chemical) followed by routine systematic inspections of declared facilities, and continuous monitoring of CW destruction. The CWC also includes provisions for challenge inspections, which are unique to the CWC. Challenge inspections can be initiated by any State Party against another State Party, and will be conducted by the OPCW Technical Secretariat. Challenge inspections will be short notice, intrusive in nature, and can occur at any facility: declared or not declared; government or commercial; located in the territory of the challenged State Party or in any other place under the jurisdiction or control of the challenged State Party.

B.3.2 CW DESTRUCTION SUPPORT AGREEMENT

The “Agreement Between the Department of Defense of the United States of America and the President’s Committee on Conventional Problems of Chemical and Biological Weapons of the Russian Federation Concerning the Safe, Secure and Ecologically Sound Destruction of Chemical Weapons” was signed by the Parties on July 30, 1992. The purpose of the agreement from the U.S. perspective is to “jump start” the Russian CW program, specifically in the area of nerve agent destruction, and thus improve Russia’s ability to meet the destruction milestones of the CWC. The agreement was concluded and is being accomplished as part of the Congressionally authorized “Nunn-Lugar” Department of Defense Cooperative Threat Reduction (CTR) program.

The Army and supporting DoD agencies, such as the Defense Threat Reduction Agency are committing significant resources towards execution of this program, the bulk of which is funded through specifically ear-marked DoD CTR authorizations.

B.4 BIOLOGICAL WEAPONS CONVENTION (BWC)

The United States signed on April 10, 1972, and ratified on January 22, 1975, “The Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and their Destruction,” commonly called the Biological Weapons Convention (BWC), which entered into force March 26, 1975. Under terms of the BWC, the Parties undertake not to develop, produce, stockpile, or acquire biological agents or toxins and weapons or means of delivery. All such material was to be destroyed within nine months of EIF of the BWC. The provisions of the BWC contain no enforcement mechanisms. The United States, the United Kingdom, and the Russian Federation are the repositories for the BWC.

The BWC called for review conferences (RevCons) every five years to review the operation of the Convention to insure that the purposes and provisions of the Convention were being realized. Recognizing deficiencies in the BWC, participants at the second, third and fourth RevCons resolved to initiate deliberations to strengthen the Convention with a series of confidence-building measures (CBMs) centered on declarations and reporting requirements. Non-binding data declarations have been urged since 1987, with spotty results. Since 1991, through RevCons, formal Ad Hoc Group sessions, and studies authorized under these bodies, the BWC Parties have worked to study and recommend measures to strengthen the effectiveness of the BWC. The Ad Hoc Group has considered the value and limitations of verification measures, from technical and scientific viewpoints.

Significant work continues on the development of a legally binding instrument establishing a set of mutually reinforcing transparency measures designed to deter violations of the BWC and to strengthen the Convention. Negotiations in general have intensified since January 1998 when President Clinton called for strengthening the BWC by developing a BWC Protocol that would include mandatory declarations and visits, and investigations of alleged use.

The military services produce and, through the Joint Staff and OSD, provide annual declarations under the BWC CBMs. The Services and components conduct research on inputs for, and assess the desirability and practicality of, potential CBMs and transparency measures in support of U.S. BWC initiatives and deliberations. They conduct and participate in exercises in this regard. These activities require expenditure of DoD resources.

B.5 NUCLEAR TREATIES AND AGREEMENTS

B.5.1 COMPREHENSIVE NUCLEAR-TEST-BAN TREATY

The Comprehensive Nuclear-Test-Ban Treaty (CTBT) was signed at the United Nations in New York on September 24, 1996, after nearly three years of negotiations at the Conference on Disarmament in Geneva. At entry-into-force the CTBT will obligate parties to the Treaty not to carry out any nuclear weapon test explosion or any other nuclear explosion.

In order to help verify compliance, the CTBT provides for an International Monitoring System (IMS) that utilizes four basic monitoring technologies (seismic, radionuclide, infrasound and hydroacoustic) and an on-site inspection (OSI) verification regime. The IMS encompasses 321 stations and 16 radionuclide laboratories worldwide, the locations of which were selected during the negotiations with global but cost-effective coverage in mind. The United States is specifically listed in the Treaty as responsible for 38 of those stations and a radionuclide laboratory.

Data from the IMS will be sent to an International Data Center (IDC) in Vienna, Austria, which will receive, store and archive the data, and make it available to all States Parties upon request, as raw data or integrated, analyzed and packaged into a user-friendly Reviewed Event Bulletin. The United States developed a prototype IDC, and a national capability to interact with the IMS.

With a CTBT, states parties have the right to request on-site inspection to resolve any matter that may cause concern about possible non-compliance with the basic obligations of this Treaty. Approval of the request requires 30 of 51 in the affirmative members on the Executive Council.

The CTBT will enter into force 180 days after ratification by 44 required states listed in Annex 2 to the Treaty.

B.5.2 ADDITIONAL PROTOCOL TO THE U.S.-IAEA SAFEGUARDS AGREEMENT

The U.S. signed the Strengthened Safeguards System Protocol (S3P) (officially known as The Protocol Additional to the Agreement between the U.S. and the IAEA for the Application of Safeguards in the U.S., the International Atomic Energy Agency) on 12 June 1998. The S3P is the culmination of four years of international efforts to strengthen the IAEA's current safeguard measures with the aim of improving its capability to detect clandestine nuclear activities. The U.S. has stated it will regard the S3P as a legally binding treaty and abide by all its provisions. The U.S.-IAEA Agreement (INFCIRC 540) includes the addition of a National Security Exclusion statement and a Subsidiary Arrangement for the use of Managed Access.

As a declared nuclear weapons state under the NPT, the United States is not required to accept any IAEA inspections in the U.S. or its territories. However, the United States has voluntarily made itself eligible for IAEA safeguards at over 240 nuclear facilities. This list of eligible facilities consists primarily of U.S. commercial nuclear facilities, but also includes more than two dozen current or former DOE nuclear weapon facilities. The IAEA currently conducts safeguards inspections at four U.S. facilities. Under the S3P provisions, strengthened IAEA safeguards measures will include visual observation, collection of environmental samples, use of radiation detection and measurement devices; declaration of certain non-nuclear R&D activities,

application of seals and other tamper indication devices, and other measures agreed upon by the IAEA and the U.S.

The DoD has a vested interest in how the USG implements the new IAEA Strengthened Safeguards inspection protocol even though no DoD activities or DoD sites have been declared as eligible for inspection. The DoD has sensitive activities located at or near many of the DOE and NRC facilities eligible for IAEA inspections under S3P. Some DoD contractors that also support DOE activities may also be subject to IAEA inspections under the S3P.

The DoD and its components must continue to determine the nature and extent of the S3P impacts and obligations on the respective organizations and DoD facilities. Specific areas of concern include, but are not limited to: required declarations, plans and reports; compliance with policies, operations, and programs with S3P provisions; susceptibility of DoD facilities, programs, and interests to S3P inspection measures; and the application and execution of the U.S. National Security Exclusion and Managed Access provisions.

B.5.3 FISSILE MATERIALS CUT-OFF TREATY (FMCT)

In 1995, the CD agreed by consensus to establish an Ad Hoc Committee (AHC) to negotiate an FMCT. However, certain states wanting to link FMCT negotiations to progress on other disarmament issues—a position not supported by the U.S. and others—brought the process to a standstill. The CD re-established the AHC in 1998 and attempted again in 1999 to reinvigorate negotiations, but debate over the disarmament issue continued to stall the process. The U.S. continues to press for FMCT negotiations to resume when the CD reconvenes in early 2000.

The U.S. envisions that under an FMCT, the five nuclear weapon states and states not party to the NPT, would be prohibited from producing Highly Enriched Uranium (HEU) and Plutonium (Pu) known as fissile material. The FMCT would require that fissile material produced after entry into force (EIF) will not be used for nuclear weapons or other explosive devices. An FMCT would not impose constraints on fissile material produced prior to EIF.

Once negotiations commence, the U.S. will press for a focused treaty that will require declaration and inspection of fissile material production facilities (e.g. Pu and HEU), and of stockpiled fissile material introduced after EIF. The U.S. envisions the IAEA will conduct FMCT verification inspections. The U.S. also envisions the use of "routine inspections" at declared facilities and "non-routine inspections" to detect undeclared activities at any site. As the pace of negotiations takes shape, the DoD must make a comprehensive review and technical assessment to identify DoD programs and equities vulnerable to a FMCT verification regime. These assessments would be executed much like the assessments already ongoing for S3P. DoD positions for FMCT negotiation support and internal implementation planning requires careful consideration regarding potential risks, whether direct or indirect, to DoD missions and national security interests.

APPENDIX C

PLANNING ASSUMPTIONS

Detailed planning guidance is provided every fiscal year to the Services and DoD agencies for use in their budget planning.

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ACQUISITION AND
TECHNOLOGY

THE UNDER SECRETARY OF DEFENSE

3010 DEFENSE PENTAGON
WASHINGTON, DC 20301-3010

JUN -2 2000

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
DIRECTOR, THE JOINT STAFF
DIRECTOR, DEFENSE THREAT REDUCTION AGENCY

SUBJECT: Revised Arms Control Planning Assumptions

Reference: USD(A&T) Memo, Subject: Revised Arms Control Treaty Planning Assumptions.
dated July 9, 1999 (U).

The attached DoD planning assumptions package supersedes those in the Reference.
DoD components will use these planning assumptions for programming and budgeting purposes.

Updates of these assumptions will be issued when necessary. Direct inquiries to the
office of Arms Control Implementation and Compliance (ACI&C), LCDR Mike Woods, (703)
697-8158.

J. S. Gansler

Attachment: As Stated
cc: USD(P)



**DoD General Planning Assumptions for
Arms Control Treaties and Agreements
FY 01-06**

- All support operations necessary to verify and comply with arms control treaties and agreements, which include the necessary logistics, personnel, operational training, RDT&E, and coordination activities, will be conducted throughout the life of the treaties and agreements.
- The U.S. will ensure communication and automation systems are adequately manned, housed, and maintained to provide required treaty/agreement notifications. The U.S. systems will be compatible with international communications systems.
- The U.S. will ensure the continued protection of sensitive and proprietary facilities, equipment, and information that may be vulnerable to treaty verification activities.

**DoD Planning Assumptions for Anti-Personnel Landmines (APL)
FY 01-06**

Protocol II of the Convention on Certain Conventional Weapons (CCW)

- The U.S. Government (USG) ratified Protocol II of the CCW on 24 March 1995.
- The CCW Review Conference agreed to adopt an Amended Protocol II in May 1996. The President submitted Amended Protocol II to the Senate for advice and consent in January 1997. Amended Protocol II entered into force (EIF) for State Parties on 3 December 1998. The USG ratified Amended Protocol II 24 May 99 and it is currently in force.
- DoD is in compliance with Amended Protocol II as follows:
 - All affected APL comply with the detectability standards (detection signature equivalent to a mass of at least eight grams of iron).
 - All remotely delivered APL comply with the self-destruct (SD) (90% SD within 30 days) and self-deactivation (SDA) (no more than 1 in 1000 will function after 120 days) requirements.
 - All new minefields under DoD control, except remotely delivered minefields, will be marked and monitored in accordance with CCW Amended Protocol II.
 - All service doctrine, manuals, and training materials conform with the Amended Protocol II requirements.
 - DoD has plans for the clearance, removal, destruction, or maintenance of APL following the cessation of hostilities in which they are employed.
- DoD will support USG participation in the CCW Review Conference and associated preparatory conferences expected to be held in 2000 and 2001.

**DoD Planning Assumptions for Conventional Treaties/Agreements
FY 01-06**

Conventional Armed Forces in Europe (CFE) Treaty:

- Provisional entry into force (EIF) occurred on July 17, 1992, and final EIF occurred November 9, 1992. By agreement among participants, final EIF was made retroactive to July 17, 1992. All measures were fully implemented during the provisional period and the Baseline period that ended November 13, 1992.
- The residual period extends through the life of the Treaty and began at the end of the residual level validation period (March 16, 1996).
 - The U.S. will be allocated approximately 15 percent of the active inspections available to NATO. This will result in approximately 20 active inspections for FY 00 and onward.
- Additional active inspections (known as supplemental inspections) are being conducted in Russia and Ukraine as part of the resolution agreement for the "Flank" issue. These will continue under CFE Adaptation. Supplemental inspection teams (U.S. and NATO) pay their own way.
 - Additional active on-site experts visits are being conducted east of the Ural Mountains to verify Russia's compliance with the Soviet representative's June 14, 1991, declaration on destruction of equipment removed from the zone of application. The Russian Federation failed to complete this equipment elimination by the year 2000 and these visits are expected to continue at least through FY00.
 - The U.S. will participate in multi-national teams for inspections at sites for destruction of equipment below maximum levels for holdings events, and any remaining reduction events at reduction sites.
 - U.S.-led teams have six U.S. team members.
 - DTRA will request U.S. representation when teams are led by other nations.
 - The U.S. will not turn down any opportunities to lead inspections to destruction or reduction events.
 - The U.S. anticipates receiving approximately nine passive, declared-site inspections annually throughout the life of the Treaty.
 - As a Stationing State Party, the U.S. forces are subject to any challenge inspection conducted against the Host State Party.
- DTRA will provide liaison officers (LNOs) to each host nation escort team during any

inspection in which U.S. facilities or equipment might be subject to inspection.

- The U.S. will participate in NATO's Verification Coordinating Committee's program of providing and hosting guest inspectors on inspection teams.
 - DTRA will request U.S. representation when teams are led by other nations.
- Preparations to receive inspections will require training of key personnel at each U.S. facility and headquarters in the zone of application on a continuing basis throughout the life of the Treaty.
- Preparations to conduct inspections will require training of inspectors, escorts, and augmentees on a continuing basis throughout the life of the Treaty.
- Preparations for inspection include development of site diagrams to Treaty specifications; and arrangement of administrative and logistical support for inspectors, escorts, host nation escorts and support personnel that will be on site during inspections.
- The Treaty will continue in force until the Adapted Treaty enters into force. Signature of the Agreement on CFE Adaptation occurred on 19 November 1999.

Confidence- and Security-Building Measures:

- In addition to CFE Treaty inspections in Europe, the U.S. will participate in inspection/evaluation/observation/equipment demonstrations and military facility/formation visit provisions of the Vienna Document 99.
 - The U.S. will conduct six active inspections/evaluations annually.
 - The U.S. anticipates receiving one evaluation visit annually. The U.S. will provide LNOs for host nation inspections when U.S. facilities or equipment are involved.
 - The U.S. will host one air base visit and one military facility visit during the period of these planning assumptions.
 - The U.S. will provide two observers/visitors to all air base/military facility visits, as well as all observable exercises/military activities and weapons demonstrations.
 - The U.S. may co-host visits whenever U.S. forces are engaged in military activities, such as peacekeeping deployments, exceeding certain thresholds or to dispel concerns.
- Preparations to receive inspections, evaluation, or visits will require training of key personnel at each U.S. facility and headquarters in the zone of application on a continuing basis throughout the life of the Agreement. As a stationing state party, U.S. forces are subject to any challenge inspection conducted against the Host State Party.

- The Vienna Document 1999 was adopted at Istanbul on 16 November 1999. There are no substantial implementation changes from Vienna Document 1994.

**DoD Planning Assumptions for an Adapted Treaty on Conventional Armed Forces in
Europe (CFE)
FY 01-06**

- An adapted CFE Treaty was signed by the States Parties at the November 1999 Istanbul OSCE Summit.
- At this time, it appears that at the earliest, the adapted CFE Treaty will be submitted to the Senate for advice and consent to ratification in the 1st Quarter, FY01.
- At this time, it appears that at the earliest, EIF for the adapted CFE Treaty will be in the 3rd Quarter, FY01.
- The adapted CFE Treaty will not be provisionally applied.
- The adapted CFE Treaty includes the following provisions:
 - Bloc-to-Bloc limits on Treaty Limited Equipment (TLE) have been replaced by National Ceilings and Territorial Ceilings.
 - All TLE categories (battle tanks, armored combat vehicles, artillery, attack helicopters, and combat aircraft) are included in National Ceilings. Only ground TLE is included in Territorial Ceilings.
 - There is no increase in overall TLE entitlements for any State Party.
 - States Parties are allowed to temporarily exceed Territorial Ceilings through basic and exceptional temporary deployments, UN or OSCE mandate for operations in support of peace, or military exercises notified 42 days in advance, and not exceeding 42 days in duration
 - TLE in transit across territorial boundaries shall be exempt from territorial ceilings of the transited state(s) party(ies), provided certain treaty requirements are met.
 - The May 1996 Flank Agreement was modified, but the concept of flank TLE limits and notifications contained in Article V of the original CFE Treaty remains in the adapted CFE Treaty.
 - While provisions for Designated Permanent Storage Sites (DPSS) will be included in the adapted Treaty, most NATO states will convert 20% of their authorized DPSS holdings to active holdings, and eliminate the remaining 80% from their National Ceilings. Others may do the same. Russia will be allowed to convert its DPSS entitlements in the flank to active entitlements.
 - Passive quotas for on-site inspections will increase from 15% to 20% of all declared Objects of Verification (OOVs), with inspecting States required to bear the cost of the additional 5%. This will increase the US passive quota from 9 to 12 in the first

year following EIF.

- States wishing to become States Parties to the adapted CFE Treaty will require the unanimous consent of all Treaty States Parties.

- The adapted CFE treaty will require quarterly notification or information exchanges effective with EIF.

- CFE adaptation, with its anticipated National and Territorial Ceiling structures, as well as Temporary Deployment and transit provisions, will generate significantly more analysis, monitoring and reporting needs for DOD and the Services to implement.

- The adapted information exchange will require R&D resources for the development of new software.

- The initial U.S. information exchange following EIF will be conducted no earlier than 1st Quarter, FY02.

- User data management workload associated with changing the frequency of information exchanges from annually to quarterly will increase by at least 25% over FY99 levels.

DoD Planning Assumptions for Open Skies Treaty
FY 01-06

- The Open Skies Treaty was signed in March 1992 and entry into force (EIF) is projected to occur during the 1st Quarter FY01. Provisional application of specific requirements of the treaty is in effect until June 30, 2000 with further extension of provisional application possible at that time. The first observation period will be from EIF through December 31 of the year following EIF.
 - The U.S. will plan to receive a minimum of four, and no more than nine, observations in the first observation period.
 - The U.S. will conduct nine observations of other States Parties (eight [8] over Russia/Belarus, one [1] [shared with Canada] over Ukraine) in the first observation period.
- The number of U.S. performed and received observations, after the first observation period, and prior to full implementation of the Treaty, will be determined on a yearly basis. It is anticipated the number per annum will be less than the maximum allowed by the Treaty (31 during the initial implementation phase). For planning and budgeting purposes, plan on the following:
 - The U.S. will conduct 15 observations per year following the first observation period.
 - The U.S. will receive 15 observations per year following the first observation period.
- During full implementation of the Treaty, it is anticipated the number per annum will be less than the maximum allowed by the Treaty (42). For planning and budgeting purposes, plan on the following:
 - The U.S. will conduct 22 Open Skies observations per year during full implementation.
 - The U.S. will receive 22 Open Skies observations per year during full implementation.
- The U.S. will conduct training missions in addition to Treaty observations from pre-EIF preparations through the life of the Treaty. These missions include U.S.-only dress rehearsals, and foreign joint training missions as required.
- U.S. forces stationed outside U.S. territory will be subject to observations over the territory of host countries that are signatories to the Treaty.
- The U.S. will ensure communication systems are maintained to provide required Treaty notifications. The U.S. system will be compatible with the international communications

system.

- The operational mission will be supported by a DTRA/USAF team.
- The USAF mission is as follows:
 - Acquire, operate, and maintain aircraft.
 - Aircraft will be co-located with similar type aircraft to provide economical maintenance and logistic support.
 - Acquire, integrate, and maintain sensors.
 - Equipment includes optical cameras, video camera(s), synthetic aperture radar (SAR), and infrared line scanner.
 - Provide initial processing/development of recorded media.
 - Provide technical support to DTRA concerning proper sensor selection and media processing for both active and passive observation missions.
- The DTRA mission will parallel their mission for other arms control agreements and will include:
 - Overall leadership, management, and support of U.S. Open Skies observation teams and escort activities, to include transportation, linguists, communications, training, Technical Equipment Inspection (TEI), and Defense Treaty Inspection Readiness Program (DTIRP).
 - Provide all sensor operators/flight monitors on both active and passive overflight missions.

**DoD Planning Assumptions for START I
FY 01-06**

- Entry into Force (EIF) of the START Treaty occurred on December 5, 1994.
 - If required, a PPCM site will be established in the U.S. at the Thiokol Facility in Promontory, Utah.
 - All PPCM construction plans should be prepared for implementation according to the minimum requirement necessary to comply with all Treaty obligations. Services/Agencies shall plan and budget for Russian initiation of their PPCM right at Promontory, Utah no later than June 2000.
- **Inspections/Visits:**
 - Conversion or elimination inspections: National Technical Means will be used for verification of conversion or elimination of some items subject to the Treaty. On-site inspection will be used whenever the right to on-site inspection is provided in the Treaty.
 - **Short Notice Inspections:**
 - The U.S. will maintain the capability to perform up to 35 short notice inspections per year in the successor states of the former Soviet Union which are party to the START Treaty (15 Data Update/Suspect Site, 10 RV On-Site, 3 Formerly Declared Facility, plus Post Dispersal, Close Out and New Facility Inspections).
 - The U.S. will maintain the capability to support 35 short notice inspections conducted by the successor states of the former Soviet Union which are party to the START Treaty in the U.S. each year.
 - **Special Right of Access Visits (SAV):**
 - The Air Force, Navy, and Army will be prepared to support at least one SAV per year. Services will fund inspections at their installations, except for those costs DTRA funds for inspection support.
 - The U.S. will conduct SAVs in the former Soviet Republics party to START. The number conducted will depend on the requirement to use SAVs to resolve compliance concerns.

**DoD Planning Assumptions for START II
FY 01-06**

- Entry into Force (EIF) will occur 3rd Quarter FY 00 to 1st Quarter FY 01.
- **Deactivation:**
 - The U.S. will deactivate by December 31, 2003, all strategic nuclear delivery vehicles that will be eliminated under START II. Deactivation will be achieved by removing the nuclear reentry vehicles from the missiles, or by taking other steps to be jointly agreed. Upon EIF, the U.S. and Russia will begin work to reach such agreement.
- **Drawdown Phase Points:**
 - U.S. planning will reflect a drawdown to an aggregate limit of no more than 4250 deployed attributable warheads (of which no more than 2160 may be on Submarine Launched Ballistic Missiles (SLBMs) and no more than 1200 on Multiple Independently Targeted Reentry Vehicles (MIRVed) Intercontinental Ballistic Missiles (ICBMs) by December 31, 2004, and an aggregate limit of no more than 3500 deployed attributable warheads (of which not more than 1750 may be on SLBMs) by December 31, 2007. Peacekeeper silo eliminations must be completed by December 31, 2007 in order to comply with the ban on MIRVed ICBMs.
 - **MM III Downloading:** In the Joint Agreed Statement regarding MM III downloading, the parties agreed that the reductions to the number of warheads attributed to MM III ICBMs may be completed at any time before December 31, 2007.
- **Heavy Bomber Exhibitions:**
 - Will occur NLT EIF+180 days. The U.S. will exhibit, in accordance with (IAW) the Treaty, a B-52H, a B-1B, and a B-2 (shrouding/protection as required). U.S. inspectors will attend all Russian exhibitions.
- **Russian Heavy ICBM Eliminations:**
 - The U.S. will observe the elimination of all SS-18 missiles and launch canisters (approximately 180). The number of inspections and timing will be dependent on the number of missiles remaining at EIF and the Russian elimination schedule. The U.S. will observe the destruction of 10 missiles per inspection.
- **SS-18 Silo Conversion Inspections:**
 - For converted SS-18 silos (maximum of 90), the U.S. will measure the silo depth before the concrete is poured, and after it hardens (two trips per silo). The restrictive ring will also be measured.

- **Reentry Vehicle On-Site Inspection (RVOSI) of Converted SS-18 Silos:**
 - The U.S. will conduct four RVOSIs each year (in addition to the 10 permitted under START I) of SS-18 silos converted to launchers for single warhead missiles. These inspections will not occur until several years after EIF
- **Rail-Mobile Launcher Eliminations:**
 - The U.S. will observe the elimination of all SS-24 rail-mobile launchers (approximately 46). Russia could keep up to 10 SS-24 rail-mobile launchers at Space Launch Facilities (SLFs) that they would not have to eliminate.

**DoD Planning Assumptions for START III
FY 01-06**

- The planning assumptions below represent a stressing case involving an early entry into force of a START III treaty that could include controls on non-deployed nuclear warheads. These assumptions must be readjusted as START III preparations develop further.
 - Negotiation support similar to START I negotiations, beginning in FY 00.
 - Entry into force as early as calendar year 2001.
 - New inspection categories, comparable in scope to those implementing START I. These are additional inspection categories, beyond those already existing, and will focus on nuclear weapon storage and handling sites.

**DoD Planning Assumptions for INF
FY 01-06**

- Entry into Force (EIF) of the INF Treaty occurred 1 June 1988 and all inspections will cease NLT midnight 31 May 2001.
 - The Parties will fully execute their treaty right to conduct inspections by means of continuous monitoring until midnight, 31 May 2001.
- **"Quota" or "Short-Notice" Inspections:**
 - The U.S. will maintain the capability to perform up to 10 short-notice inspections per treaty calendar year from 1 June through 31 May 2001
 - DoD will plan for a combined total of 10 short notice inspections to be conducted by the Treaty Implementing Parties in the U.S. and Europe each treaty calendar year from 1 June 1996 through 31 May 2001.
- DTRA and the Services will plan for the cessation of short-notice and INF continuous monitoring inspections on 31 May 2001. Possible areas of impact should include, but not be limited to: civilian and military manning, training, airlift support, operations at Magna/Votkinsk, and contract support.

DoD Planning Assumptions for the ABM Treaty Agreed Statements on Demarcation (ASD) and Confidence Building Measures Agreement (CBMA) FY 01-06

- Entry into Force (EIF) of the ASD and CBMA will occur 3rd Quarter FY 01.
- On 26 September 1997, representatives of the United States, the Russian Federation, Belarus, Kazakhstan and Ukraine signed agreements that clarify the demarcation between anti-ballistic missile (ABM) systems, which the ABM Treaty limits, and theater missile defense (TMD) systems which the treaty does not limit per se. These ASDs and the Memorandum of Understanding on Succession are to be forwarded to the Senate for advice and consent. The CBMA, the Joint Statement on Plans, and new Standing Consultative Commission regulations will also be provided to the Senate as a part of the package of ratification materials.
- **U.S. Systems covered by the CBMA:**
 - Theater High-Altitude Area Defense (THAAD) System
 - Navy Theater-Wide Ballistic Missile Defense Program (Navy Upper Tier)
 - Other lower-velocity systems as agreed in the future, and
 - All future higher-velocity TMD systems.
- **Notifications:**
 - BMDO, for TMD system acquisition programs, and the Services, for the deployed TMD systems, will establish internal notification procedures and timelines so that, as required by CBMA, they will provide:
 - Within 30 days after EIF or no later than 90 days in advance of the first launch, the names and geographic locations of TMD test ranges and other test areas where launches of interceptor missiles will take place.
 - No later than 10 days in advance of the planned date of launch of an interceptor missile with the use of a ballistic target missile, remaining effective for seven days beginning with this date, the notification of the launch of an interceptor missile including: name of the test range; planned date of launch; planned launch points of the interceptor missile; and planned launch points of the ballistic-target missile.
 - Joint Staff in coordination with OSD and the Interagency, as required, will transmit notifications in approved formats to the NRRC.

-- Services, Joint Staff, and DoD agencies will use approved NRRC formats and other agreements on implementing details to provide the data and notifications required by the CBMA.

- **Data Exchanges:**

-- Services and DoD agencies will establish internal procedures and timelines for reporting information required as part of the initial and annual exchanges of system and component information through the Joint Staff. Joint Staff will provide data for interagency clearance.

--- The initial information exchange will take place no later than 90 days after EIF of the CBMA and will be updated each year thereafter reflecting the program status as of January 1 (and provided no later than April 1 of each year).

-- The USG, led by ACIS with Joint Staff and OSD inputs, will provide an assessment of the TMD programs with respect to the development, testing, and deployment of the theater ballistic missiles confronting the United States.

- **Demonstrations of Systems and Observations of Tests by Other Parties:**

-- The United States may conduct demonstrations of systems and observations of tests on a voluntary basis at existing or any future declared TMD test range.

--- As required, Services, Joint Staff, and DoD agencies will develop and submit contingency plans to OUSD(AT&L) for compliance review.

**DoD Planning Assumptions For the
Comprehensive Nuclear Test-Ban Treaty
FY 01 – 06**

- The United States signed the Comprehensive Nuclear Test-Ban Treaty (CTBT) on September 24, 1996, and the President forwarded the Treaty to the U.S. Senate for advice and consent to ratification on September 22, 1997. The Senate, on October 13, 1999, voted not to give its advice and consent to ratification. However, the President remains committed to the Treaty and, with Secretary of Defense support, has directed that his Administration work closely with the Senate to address concerns raised during the ratification hearings in order that the United States will ratify. Further, the United States intends to continue the moratorium on nuclear test explosions and will monitor for the absence of nuclear test explosions by other relevant countries. In order for the CTBT to enter into force, forty-four specific States, including the United States, must ratify this treaty.
- The Preparatory Commission (PrepCom), established on November 19, 1996 for the purpose of carrying out the necessary preparations for the effective implementation of the verification regime of the Treaty, will continue its operations until EIF. The Provisional Technical Secretariat (PTS), established on March 3, 1997 as the full-time staff component, will continue to perform the administrative and technical work associated with preparing for Treaty implementation and report its progress to the PrepCom.
- Following the Senate vote on ratification, the Administration did express its desire for the U.S. to continue its support of the implementation preparations by the PrepCom as a means to promote multilateral activities related to nonproliferation. United States commitments were made initially with a primary linkage to CTBT. However, given domestic and international value to monitoring under a moratorium on nuclear weapon test explosions, many activities associated with honoring those commitments are not CTBT EIF sensitive.
- To this end, the DoD should plan for implementation and EIF in the 4th QTR FY02 of the Treaty based upon the following assumptions:
 - The Administration and Congress will continue to support domestic and international preparations for a CTBT, including, but not limited to, establishment of the international monitoring system that provides a significant cost-effective, value-added enhancement to United States national, nuclear test monitoring capabilities and nonproliferation goals regardless of EIF of the CTBT.
 - The United States will continue to honor its commitments towards establishing the International Data Center; the upgrade and new deployment of monitoring sensors, and the development and testing of procedures associated with future verification regimes, including those associated with monitoring for nuclear weapon test explosions.
 - The DoD will continue to participate in all matters associated with the mandate of the

PrepCom. The DoD will maintain full-time representation during PrepCom Plenary sessions and send experts and advisors as needed to support the U.S. Vienna Delegation, the PrepCom, its Working Groups, and the PTS.

- The need for sensor technology, location and installation; data collection, management, analysis, and distribution; and on-site inspection technology will require DoD applied and system-oriented research, development, test and evaluation activities prior to EIF. Given their long-lead times and their relevance to U.S. continued commitments towards a moratorium on nuclear explosions, such activities will continue beyond EIF.
- The DoD will work with Congress to address concerns raised during the 1999 Senate hearings. The DoD will consider an enhanced verification regime, including additional and improved sensors and procedures, to supplement or replace the current treaty-required monitoring suite.
- DoD will support relevant aspects of the provisional system of verification and monitoring facilities required by the CTBT (i.e., the provisional IMS) as these systems and facilities add value to U.S. monitoring capabilities. By the end of 4th Quarter FY02, DoD will install the full network of U.S. IMS facilities. Following installation, DoD will operate and maintain all IMS facilities in the U.S. on a continuing basis and will cooperate with the PrepCom on the certification of these facilities and examine the feasibility of the PTS to provide operational funding following this certification.
- DoD will also continue to operate the prototype IDC through its transition to the PrepCom in accordance with the approved transition plan. The prototype IDC will serve as an integral part of the development, deployment, and employment of U.S. monitoring capabilities. The DoD will provide a long-term sustainment program to calibrate and maintain a state of the art capability at the IDC.
- DoD will support those activities and operations necessary to implement, verify, and comply with CTBT requirements, including the necessary long-lead items required in advance of EIF such as: facilities, logistics; personnel, operational training, on-site inspection procedures and associated workshops, field exercises, and mock inspections.
- On-site inspections will likely be rare events. The full scope of the on-site inspection activities will be known before EIF to allow the DoD components to finalize implementation and compliance plans under development and establish their readiness to host inspections in accordance with established policy and Treaty timelines.
- DoD, along with DOE, will continue to implement annual certification procedures to determine levels of confidence in the safety and reliability of the U.S. nuclear stockpile. DoD will implement relevant aspects of Presidential Safeguard D and if necessary, implement Presidential Safeguard F.
- DoD will actively support U.S. objectives within the CTBTO upon EIF.
- DoD will coordinate all implementation, verification and compliance activities

throughout the Department through the DoD CTBT Implementation Working Group (DIWG) process.

**DoD Planning Assumptions for the
Fissile Material Cutoff Treaty (FMCT)
FY 01-06**

- The United States has underway a number of non-proliferation initiatives to increase controls on fissile materials that could be used for weapons production. In August 1998, the Geneva Conference on Disarmament (CD) reached consensus on establishing an ad hoc committee to prepare for commencement of formal FMCT negotiations.
- Under a proposed FMCT, the U.S. is pressing for a focused treaty that would require declaration and inspection of production facilities for fissile material, (e.g., plutonium and highly enriched uranium), and safeguards on fissile material produced after EIF. The treaty would permit challenge inspections of facilities suspected of producing fissile material. The DoD implementation of a FMCT requires careful consideration and forethought regarding potential risks, whether direct or indirect, to critical DoD missions.
- Although it is too early at this stage to project an EIF, DoD must provide technical support and planning for the negotiations and possible implementation of the treaty. DoD will base its implementation planning on the following assumptions:
- The FMCT will ban the production of fissile material for use in nuclear weapons or other nuclear explosive devices. The FMCT will not cover stockpiles existing prior to EIF. Production, enrichment, and reprocessing of fissile material after EIF will be subject to rigorous verification and safeguards. A monitoring and verification regime may include remote monitoring and/or routine inspections at declared facilities, and non-routine inspections to detect undeclared activities at any site. DoD will develop special measures to protect Nuclear Naval Propulsion Information (NNPI).
- The DoD Components will conduct a Comprehensive Review and Technical Assessment by DoD Components to identify DoD programs and equities vulnerable to a FMCT verification regime requiring the allocation of additional program funds to assess and implement the provisions with respect to DoD responsibilities.
- The DoD Components will establish procedures for the implementation of verification measures under a FMCT.
- As approved by cognizant authority within USD(P), the DoD Components will provide technical assistance to interagency discussions and international negotiations and any other technical discussions relating to, the FMCT.
- The USD(AT&L) will supply technical studies and assessments as needed to support USD(P) and U.S. Delegations. As requested by USD(P), the DoD will send experts and advisors as needed to support these discussions in the Conference on Disarmament and its working groups.

**DoD Planning Assumptions for the
U.S. Additional Protocol on the Application of
IAEA Strengthened Safeguards
FY 01-06**

- On May 15, 1997, the International Atomic Energy Agency (IAEA) adopted a Model Protocol to strengthen its current safeguards system with the aim of improving its capability to detect clandestine nuclear activities. On June 12, 1998, 'The Protocol Additional to the Agreement between the U.S. and the IAEA for the Application of Safeguards in the U.S.,' was agreed to by the IAEA Board of Governors, and signed by both parties. In addition to the language of the Model Protocol, the U.S. Protocol contains a National Security Exclusion Clause and a Subsidiary Arrangement for the use of Managed Access.
- In this agreement, current or former defense related facilities are eligible for IAEA inspections. The U.S. intends to apply all Model Protocol provisions except where they involve information or locations of direct national security significance to the United States. Furthermore, the U.S. has stated that we will treat the Strengthened Safeguards Protocol as a legally-binding treaty, and submit it to the Senate for advice and consent for ratification and subsequent entry-into-force (EIF).

The DoD will base its implementation planning on the following assumptions:

- The State Department will consider in CY00, when to submit the U.S. Additional Protocol to the Senate for advice and consent to ratification, with EIF occurring as early as CY01.
- The U.S. Additional Protocol will require the allocation of additional program funds to assess and implement the provisions with respect to DoD responsibilities.
- The IAEA will conduct the strengthened safeguard inspections of U.S. facilities. Given the broader scope of the strengthened safeguard protocol and that the U.S. is treating the Protocol as a treaty, we believe that a formalized notification process (in-line with other treaties) will best serve U.S. interests.
- To facilitate a smooth implementation of the strengthened safeguards Protocol in the U.S., we believe it prudent to plan for a single authoritative body to handle the coordination between IAEA and all required U.S. agencies. With this in mind, notifications of inspections from the IAEA would come to a single U.S. center, who in turn would notify all agencies concerned.
- Other treaty protocols call for points of entry to allow for the processing of international inspectors, technical inspection and validation of equipment, and establishing host team escort. The DoD desires to maintain the same control and accountability of inspectors and equipment as in these other treaties and for these reasons, DoD plans to factor in points of entry as part of its planning.

- With the exception of national security activities, the U.S. Additional Protocol will allow the IAEA to seek access to any location in the United States, as defined in the protocol.- The DoD will review the U.S. voluntary offer of DOE and NRC facilities eligible for strengthened safeguards inspections to identify DoD programs and equities in proximity to these facilities. DoD Components will ensure that the assessments that were conducted to determine possible vulnerabilities to DoD equities posed by an IAEA strengthened safeguards inspection regime are periodically updated, including as new facilities are added to the list of eligible facilities. Assessment schedules will be coordinated separately, but DoD Components should plan to have their most current assessments completed not later than 60 days following the final version of IAEA implementation procedures.
- OSD will distribute the semi-annual updates of the DOE and NRC Eligible Facilities list for IAEA Safeguards to the Services and Agencies for review. The Services and Agencies will decide whether or not vulnerability assessments need to be performed because of 1) existing programs located in facilities that have been added to the eligibility list, or 2) new programs being in a facility already on the list, or 3) an existing program transferring or expanding into a facility on the eligibility list.
- The Nuclear Risk Reduction Center (NRRC) will notify NTPO as the OSD office and the Services and Agencies of an IAEA inspection to an eligible facility. It will be the responsibility of each organization to take the appropriate actions (managed access, National Security Exclusion, etc.) to protect their programs located at the facility being inspected by the IAEA
- The DoD and DOE in consultation with other U.S. agencies has the right to determine information or locations that constitute national security significance. The DoD will implement managed access procedures to protect programs and equities of national security significance which is defined in a subsidiary arrangement to the Protocol. The procedural aspects of how managed access will be implemented will be developed by DoD in CY00.
- The DoD Components will establish plans and procedures for the implementation and verification of strengthened safeguards requirements using the managed access framework and lessons learned from the CWC. Schedules will be coordinated separately, but DoD Components should have their plans completed not later than 30 days following EIF.
- Environmental sampling will not be allowed at or near DoD equities unless it has been assessed that no national security information will be at risk.
- Internal DoD notification requirements for IAEA strengthened safeguards inspections must be decided and developed. These arrangements must interface with the single U.S. center notification channel once established.
- The DoD must have an effective voice in decisions that affect its assets. To that end, for inspections conducted at current and former defense sites, the DoD and DOE should

develop a Memorandum of Understanding (MOU) that ensures consistency during inspection activities and that necessary measures are taken to protect sensitive DoD information.

- The DoD will coordinate all implementation activities throughout the Department through the DoD Nuclear Safeguards Implementation Working Group (NS-IWG) process. Compliance issues will be handled through the CRG process.
- The DoD will complete an agreement with the IAEA to provide technology to support the enhanced IAEA monitoring mission. The DoD will provide for a long-term IAEA technical support program to strengthen the enhanced safeguards monitoring regime.
- OSD Policy will represent OSD in all international interactions and interagency deliberations related to policy, verification, and compliance.

**DoD Planning Assumptions for Convention on the Prohibition of the Development,
Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on
Their Destruction (BWC)**

FY 01-06

- I. Background:
 - A. Entry Into Force (EIF): March 26, 1975
 - B. BWC Confidence Building Measures (CBMs): Second, third, and fourth BWC Review Conferences, September 1986, September 1991, and November 1996.
 - C. Next BWC Review Conference is November/December 2001.
 - D. United States Government (USG) formulation of national objectives and policy will intensify through 2000 consistent with the President's goal to complete substantive work on the BWC Protocol.
- II. General Implementation Assumptions:
 - A. OSD, the Joint Staff, and components will continue to prepare annual information declaration pursuant to existing BWC CBMs (see I.B. above) for DoD submissions NLT April 15 each year. Upon enactment of a BWC Protocol more extensive legally binding declarations will likely be required to an international implementing organization.
 - B. OSD, the Joint Staff, and the components will continue to review annual information declarations with previous submissions to ensure accuracy and consistency.
- III. Negotiation of measures to strengthen the BWC
 - A. USG continues to develop national positions on numerous proposed provisions of a BWC protocol. DoD will conduct analysis to assess the impact on DOD equities and develop detailed proposals for mandatory data declarations, on-site procedures for visits and investigations, Article VI Assistance and Protections, Article VII Scientific and Technology Exchange, and other protocol measures under consideration in the BWC Ad Hoc Group Negotiations.
 - B. Components will make assessments of key issues and support the development of DoD negotiating positions. Assessments will focus on potential impacts of declarations and intrusive on-site programs, and protection of classified, national security information, and other military equities on DoD installations.

- C. DoD will develop criteria for submitting annual BWC declarations and will provide a mechanism for ensuring consistency among past and present submissions.
- D. Technical support is necessary to analyze a myriad of proposals associated with BWC Ad Hoc Group negotiations. The scope of required technical support will include: 1) participation of DoD BW technical experts at Geneva based negotiations and technical working groups; 2) research of related technical issues in defense of DoD negotiating positions; 3) development of databases that relate to DoD equities in BWC negotiations.
- E. Completion of a protocol is expected by 4th Quarter FY01. This will be followed by a Special Conference in 2001, and the introduction of a BWC Preparatory Commission, which will last until the BWC Protocol's EIF, in order to finalize implementation procedures.
- F. Following the November/December 2001 BWC Review Conference, BWC Protocol EIF is expected to be no earlier than 1st Quarter FY 04. Investigations, consultative meetings, and visits, as part of BWC protocol measures to strengthen compliance, will be hosted by DoD no earlier than 1st Qtr FY 04. These BWC investigations, meetings, and visits to DoD facilities per year are broken down as follows: two voluntary visits at declared facilities; five consultative meetings; and five non-challenge visits at declared facilities; and one challenge investigation at a declared or undeclared facility. Due to continued BWC Ad Hoc Group negotiations, the numbers and types of yearly investigations and visits to DoD facilities may change.
- G. Services and DoD agencies will conduct special assistance visits, table-top exercises, mock inspections, and security assessments at U.S. CONUS and OCONUS sites to support the development of BWC Protocol negotiating positions, and to measure and strengthen site preparations and ensure compliance. DoD services and components should plan for their participation, when appropriate, in DoD-wide tabletops and DoD-wide inspection exercises. Participating Military Departments and other Components, including OSD and Joint Staff, will be responsible for funding their own participation and any associated/ additional support they may require. Planning, exercise coordination, and rotational scheduling shall be coordinated among the participants.
- H. DoD should plan to conduct at least one visit and one exercise at DoD facilities each fiscal year, based on envisaged BWC protocol procedures to be coordinated by the BW Implementation Working Group. In accordance with Public Law 106-113, the Secretary of Defense shall make available specialized personnel to participate in National Security Trial Investigations and Visits at non-DoD facilities with the objective of "ensuring that the compliance procedures of the protocol are effective and adequately protect the national security of the United States." The Secretary of Defense may also require personnel to participate in

U.S. industry trial investigations and visits to assist in assessing security implications of such visits or investigations to their facilities. Such exercises will be conducted at USG facilities, installations and national laboratories to include DoD facilities.

**DoD Planning Assumptions for Chemical Weapons Convention
FY 01-06**

- I. Entry Into Force: April 29, 1997.
- II. General Implementation Assumptions
 - A. Dulles International Airport will continue to serve as the designated U.S. point of entry (POE). San Francisco Airport will serve as a limited point of entry solely for the rotation of Organization for the Prohibition of Chemical Weapons (OPCW) inspectors, without equipment, to and from CW destruction monitoring activities at Tooele, Utah; Hawthorne, Nevada; Hermiston, Oregon; Pueblo, Colorado; and Johnston Island.
 - B. DTRA/OS will conduct POE processing and technical equipment inspections (TEI) and certifications for all CWC inspections on U.S. territory.
 - C. All support elements necessary to fulfill DoD CWC obligations and missions, including personnel and logistics, will continue to be in place.
 - D. DoD will serve as Lead Agency at all CWC inspections and related visits to DoD facilities and DoD contractor facilities that are either former CW production facilities (CWPFs) or CW destruction facilities (CWDFs), or are DoD owned by or leased to DoD, including DoD owned contractor operated facilities.
 - E. The OPCW will conduct the CWC inspections of U.S. facilities.
 - F. Costs of inspection activity under the CWC for DoD CW facilities (to include inspection team lodging, meals, air transport of inspectors and their equipment from The Hague to the U.S. and within the U.S., emergency medical care, inspector salaries while conducting inspections of U.S. CW facilities, installation and support for monitoring equipment) are to be borne by the U.S. Government. The costs will be funded by DoD, except for the costs of inspectors' salaries, per diem rates in excess of the Joint Travel Regulations, and international transport of inspectors and their equipment, which will be paid for by the State Department, beginning in FY 00. (Costs for providing these inspection services for potential DoD Schedule 1, 2, 3, or other facilities are to be borne by the OPCW).
 - G. DTRA/OS will provide, logistics support, and escort functions for all inspections and visits when DoD is the Lead Agency.
 - H. DTRA/OS may provide, logistics support, and escort functions for non-DoD Lead Agencies only on a formally negotiated, cost-reimbursable basis.
 - I. The need for verification inspection technology and data management Research, Development, Test, and Evaluation (RDT&E) and assessments will continue.

- J. Special assistance visits, table-top exercises, mock inspections, and security assessments will continue to be conducted at U.S. CONUS/OCONUS facilities. The Services will decide which types of preparation activities will continue to be conducted at their facilities. DoD will conduct in FY 00-01, the challenge inspection exercises outlined in the OSD memo of 25 April 2000. In addition, in follow on years, DoD will perform either a DoD-wide tabletop or DoD-wide inspection exercise annually, unless the periodicity is modified by the CWIWG. DoD services and components should plan for their participation, when appropriate, in DoD-wide tabletops and DoD-wide inspection exercises. Participating Military Departments and other Components, including OSD and Joint Staff, will be responsible for funding their own participation and any associated/ additional support they may require. Planning, exercise coordination, and rotational scheduling shall be coordinated by the CWIWG.
- K. The USG will conclude a cost sharing arrangement with the OPCW.
- L. The Army will continue to fund and maintain the Edgewood Chemical Biological Forensic Analytical Center (ECBFAC) (the former Army Material Command Treaty Laboratory (AMCTL)) to maintain certification by the OPCW as a designated laboratory. CWC sampling and analysis support to other DoD components and other USG agencies will be on a cost-reimbursable basis.
- M. The first special session of the CWC Conference of States Parties will be held in FY 02. This Conference may modify the list of scheduled chemicals declarations processing requirements, and inspection technology and equipment. If enacted, these modifications will impact existing inspection and declaration technologies.

III. Declarations

- A. Updates and systematic revision of DoD declarations will continue as required, as well as annual reporting on DoD Schedule 1 permitted production, CWPF destruction, converted CWPFs, and CWDF operations. The current U.S. declaration comprises twelve stockpile storage facilities at ten geographic locations; eleven CWPFs at six geographic locations; twenty-four chemical weapons destruction facilities at eleven geographic locations; six developmental facilities at six geographic locations; one single small-scale facility (SSSF) and one permitted production facility for protective purposes.
- B. DoD will not participate in the collection, reporting or declaration of information regarding Schedule 1, Schedule 2, Schedule 3, or discrete organic chemicals at any contractor-owned facilities.
 - 1. Declarations required for the production of Schedule 1 chemicals under defense related contracts at contractor-owned facilities will be reported to and declared by the Department of Commerce (DOC). DoD expects to receive copies of the declarations.

2. Declarations required for the production, consumption, or processing of Schedule 2 chemicals, or the production of Schedule 3 or discrete organic chemicals under defense-related contracts at contractor-owned facilities will be reported and declared by the DOC.

IV. Remaining Initial Inspections

The U.S. will receive initial inspections within a one year period at 12 commercial Schedule 1 facilities beginning not earlier than 3rd Qtr FY00. Beginning not earlier than 3rd Qtr FY 00, the U.S. will receive initial inspections at all Schedule 2 and 3 facilities declaring above their verification threshold. DTRA will provide POE processing, logistics and operational support functions to the DOC for these inspections on a cost reimbursable basis, as delineated in the DTRA-DOC support agreement. The number of Schedule 2 facilities to be inspected during the first year after the U.S. submits its commercial declaration could exceed one-third the number of facilities declared, but should be no more than one-half the number of declared facilities.

V. Routine Inspections

- A. The OPCW will conduct a minimum of one inspection per year of each declared U.S. Schedule 1 facility.
- B. The OPCW will conduct up to 40 inspections in the U.S. of declared Schedule 2, 3, and other facilities each year, beginning no earlier than May 1, 2000. DTRA/OS will provide POE processing, logistics and operational support functions to Department of Commerce (DOC) for these inspections on a cost-reimbursable basis, as delineated in the DTRA-DOC support agreement.
- C. The OPCW will conduct a maximum of one inspection per year of each declared CW storage facility in the U.S.
- D. Inspections of former CWPFs will occur at every declared facility up to a maximum of four times per year per facility.
- E. U.S. CWPFs will be divided into six geographic regions. OPCW verification activity will result in four inspection visits per region per year. There may be up to 44 inspections of CWPFs conducted by means of sequential inspections during these 24 inspection visits per year.

VI. Close-out Inspections

Close-out inspections are envisioned for CW storage facilities upon complete removal of stockpiles from those locations and at CWPFs following their destruction.

VII. Monitoring the Process of CW Destruction

- A. U.S. CW destruction will occur at twenty-four facilities.
- B. OPCW inspection teams will perform continuous monitoring at U.S. CW destruction facilities during destruction operations. Monitoring of the process of CW destruction will occur at all facilities in the U.S. where destruction is ongoing.
- C. Rotation of OPCW inspector personnel at CW destruction facilities will occur approximately every three weeks.
- D. The OPCW will devote no more personnel and resources (to monitor the process of destruction) than necessary and appropriate for the size and activity level of the facility.

VIII. Challenge Inspections

- A. The OPCW will conduct no more than one challenge inspection at U.S. facilities within the continental U.S. or U.S. facilities outside the continental U.S. in any year. Therefore, DoD components should assume that they will not be required to host more than one challenge inspection per year.
- B. In addition to the US/United Kingdom Host Country Agreement (HCA), the USG expects to conclude HCAs or other planning arrangements with other countries, to include Australia, Bahrain, Germany, Italy, Japan, Jordan, Kuwait, Oman, Qatar, Spain, Saudi Arabia, Republic of Korea, Iceland, Belgium, Denmark, Greece, Hungary, Luxembourg, Netherlands, Portugal, Singapore and Turkey.